100TH CONGRESS
2d Session

SENATE

EXEC. REPT.
100-14

OZONE PROTOCOL

FEBRUARY 19 (legislative day, FEBRUARY 15), 1988.—Ordered to be printed

Mr. PELL, from the Committee on Foreign Relations, submitted the following

REPORT

[To accompany Treaty Doc. 100-10]

The Committee on Foreign Relations, to which was referred the Montreal Protocol on Substances that Deplete the Ozone Layer, done at Montreal on September 16, 1987, to the Vienna Convention for the Protection of the Ozone Layer, having considered the same, reports favorably thereon without amendment and recommends that the Senate give its advice and consent to ratification thereof.

PURPOSE

The primary objective of the Montreal protocol is to provide for internationally coordinated control of ozone-depleting substances in order to protect public health and the environment from the adverse effects of the depletion of stratospheric ozone.

BACKGROUND

For the past 14 years, scientists have been expressing concern that large scale releases of chlorofluorocarbons (CFC's) into the atmosphere will lead to depletion of the delicately balanced ozone levels in the stratosphere.

Ozone is a unique form of oxygen. It is found in the stratosphere by the action of sunlight on oxygen. Unlike the abundant atmospheric gases, oxygen and nitrogen, ozone represents only a tiny fraction of the total atmosphere, with a global concentration of about 300 parts per billion in volume. If all the ozone were compressed into a band of pure gas, the layer around the Earth would be only 3 millimeters thick.

Despite its limited quantity, ozone is extremely important to the life processes on Earth. The Earth's ozone layer acts as a filter, shielding the planet's surface from some of the ultraviolet rays

S381-4
S384-1

emanating from the Sun. This is important because ultraviolet radiation causes skin cancer and cataracts, suppresses the human immune system, damages crops and aquatic organisms, contributes to the formation of smog, and accelerates the degradation of outdoor materials.

Complex natural forces are continually at work creating and destroying ozone in the atmosphere. This dynamic equilibrium involves first the breakdown of individual molecules of oxygen (O_2) into atomic oxygen (O) through its absorption of ultraviolet radiation. In turn, each atomic oxygen normally combines with additional molecules of O_2 to form ozone (O_3). As long as the Earth's sunlit atmosphere contains molecular oxygen, as it has for more than 1 billion years, ozone will be maintained in this dynamic balance between formation and destruction.

In 1974, scientific studies suggested that a group of chemicals known as chlorofluorocarbons, or CFC's, are disturbing the ozone balance. CFC's were first developed by General Motors in the 1930's to be used as an ammonia substitute for refrigeration uses. They are now widely used as refrigerants, aerosol propellants, foam-blowing agents, and solvents.

CFC's are chemically inert, nontoxic, and easily liquified. It is the absence of chemical reactivity that makes CFC's so dangerous to the ozone layer. Unlike less inert compounds, CFC's are not destroyed or removed in the lower atmosphere by rainout, oxidation, or sunlight. Instead, they ascend into the upper atmosphere where their chlorine components are released under the effects of ultraviolet radiation, and where they encounter and destroy ozone. Almost all of these freed chlorine atoms find and react with the ozone in seconds, creating chlorine oxide as a byproduct. In a subsequent reaction, the chlorine oxide releases its oxygen atom to form molecular oxygen, and the chlorine atom is freed once again to repeat the process of destroying ozone. Through this continuing cycle of reactions, each chlorine atom acts as a catalyst destroying about 100,000 molecules of ozone before the chain reaction is permanently ended. The atmospheric levels of CFC's are growing at a rate of 5 to 7 percent per year.

In 1978, domestic concern about this issue resulted in a U.S. ban on the use of CFC's in aerosol products.

On the international level, in 1985, under the auspices of the United Nations Environment Program (UNEP), 20 nations plus the European Economic Community agreed on a Convention for the Protection of the Ozone Layer. The convention creates a framework for international cooperation on research, monitoring, and exchange of information, and provides procedures for developing control measures. Pursuant to this convention, the Montreal protocol was negotiated and signed on September 16, 1987. The intent of the protocol is to provide for internationally coordinated control of ozone-depleting substances.

Major Provisions

The following is a summary of the major provisions of the Protocol.

The agreement provides for the following:

—Covered compounds include CFC's 11, 12, 113, 114 and 115, and Halons 1211, 1301, and 2402;
—Date of entry into force is 90 days after 11 signatory nations representing at least two-thirds of world CFC consumption have deposited instruments of ratification with the United Nations Environment Program (UNEP), but no earlier than January 1, 1989;
—Freeze consumption and production of the CFC compounds at 1986 levels beginning on the first day of the seventh month after the date of entry into force (EIF);
—Freeze consumption and production of the Halon compounds at 1986 levels on the 1st day of the 37th month after EIF;
—Reduce consumption and production of the CFC compounds to 80 percent of 1986 levels beginning in the 12-month period of July 1, 1993 to June 30, 1994;
—An additional 10 percent of production will be allowed for purposes of supplying developing nations until June 30, 1998. On July 1, 1998, this percentage increases to 15 percent;
—Further reduce consumption and production of the CFC compounds to 50 percent of 1986 levels beginning in the 12-month period of July 1, 1998 to June 30, 1999;
—Low consuming developing nations will be allowed to increase consumption up to 0.3 k/g per capita for a period of 10 years. After 10 years, the developing nations must follow the reduction schedule agreed upon;
—A limited exemption for CFC production facilities under construction or contracted for prior to September 16, 1987, and provided for in national legislation prior to January 1, 1987;
—Scientific, economic, and technological assessment beginning in 1990 and at least every 4 years thereafter;
—Import of bulk chemicals from nonparty states is prohibited 1 year after EIF;
—Import of products containing CFC's from nonparty states will be banned approximately 4 years after EIF. A list of such products will be developed within 3 years;
—Within 5 years after EIF, parties will determine the feasibility of banning or restricting trade in products made with CFC's;
—Changes in the 50 percent reduction step will require a vote of two-thirds of parties representing two-thirds of the parties' calculated level of consumption;
—Other adjustments and reductions require a vote of two-thirds of parties representing 50 percent of consumption; and
—Addition of new compounds to the agreement requires a simple vote of two-thirds majority of parties.

The following is a more detailed explanation of the protocol's major provisions which was submitted to the President by the Secretary of State in a letter dated November 21, 1987:

Two principal features of the protocol are an obligation to limit consumption and production of ozone-depleting substances (article 2) and the restriction of trade in controlled substances with States not party to the protocol (article 4).

On control measures, article 2 requires:

A freeze at 1986 levels on annual consumption of chlorofluorocarbons 11, 12, 113, 114, and 115 beginning in the seventh month after entry into force, and of halons 1211, 1301, and 2402 beginning 3 years after entry into force.

Long-term scheduled reductions (of 20 percent by 1994, and of 50 percent by 1999) of chlorofluorocarbon annual consumption.

Periodic assessments of the control provisions, based upon scientific, environmental, technical and economic information, which could result in addition or removal of chemicals from the list of controlled substances or a change in the reduction schedule or reduction target.

Production of the controlled substances by parties to the protocol in individual countries is also controlled, but allowed to remain somewhat above consumption in individual countries, in order to maintain sufficient supply for developing countries and to achieve economic efficiencies or to respond to supply shortages. The parties' total production can be no greater than their total allowed consumption.

Article 2 also contains specific provisions for parties whose production in 1986 was less than 25 kilotons (paragraph 5); parties which had production facilities under construction before adoption of the protocol (paragraph 6); and parties that are members of a regional economic integration organization (REIO) (paragraph 7).

In particular, paragraph 5 of article 2 permits a party whose 1986 production of the controlled substances was less than 25 kilotons to transfer to or receive from another party production as long as the combined production of the parties concerned does not exceed their combined production limits as set by the protocol. It would allow, for example, U.S. producers to maintain production beyond our allowed consumption level in order to supply Canadian users if small Canadian plants are closed because they have become inefficient as a result of controls.

Under paragraph 6, a party is permitted to add to its 1986 base the amount produced by facilities under construction or contracted for and provided for in national legislation before adoption of the protocol, provided its annual consumption of the controlled substances does not exceed .5 kilograms per capita. This paragraph would allow the Soviet Union to include in its 1986 base year level expanded production foreseen in its 5 year plan; with this adjusted base level, it would freeze and begin reducing along with other protocol parties.

Paragraph 7 permits parties that are member states of a REIO to fulfill jointly their obligations regarding consumption, as long as their total combined level of consumption does not exceed the limits specified in article 2 and provided all member states of the REIO and the organization itself are parties to the protocol. This provision would allow the European Economic Community (EEC) to fulfill jointly its obligation respecting consumption, provided all 12 EEC members join the protocol. Each EEC-member state that is a party to the protocol would still be required to comply individually with the protocol's production limits.

The procedure for calculating "production" and "consumption" is outlined in article 3. The calculation takes into account the relative ozone-depleting potentials of the various chemicals.

With respect to trade with non-parties, article 4 provides for:

A ban on imports from nonparties of the controlled substances within 1 year of the protocol's entry into force.

A ban on imports from nonparties of products containing the controlled substances starting in the fourth year following the protocol's entry into force. Within 3 years of entry into force, the parties are to elaborate a list of products subject to this provision.

Consideration within 5 years of entry into force of restrictions on imports from nonparties of products produced with (but not containing) the controlled substances.

A prohibition against concluding new agreements which provide nonparties with financial assistance for producing the controlled substances.

Article 5 provides a 10 year grace period from compliance with the control measures for low-consuming developing countries that adhere to the protocol, in order to encourage the broadest possible participation in the protocol.

Article 6 specifies that beginning in 1990 and at least every 4 years thereafter, the parties shall assess the control measures on the basis of available scientific, environmental, technical and economic information. It provides for expert panels, which are to report to the parties, to be convened at least 1 year before each assessment.

Article 7 requires an annual report by each party of its production, imports and exports of controlled substances Article 8 requires the adoption of procedures and institutional mechanisms for determining noncompliance and for treatment of parties found to be in noncompliance. Articles 9 and 10 provide for cooperation in research and exchange of information on alternative substances, products, and technologies to reduce emissions of the controlled substances; cooperation in promoting public awareness; and technical assistance to facilitate participation in and implementation of the protocol. Article 11 provides for meetings of the parties, which will normally be held in conjunction with meetings of the parties to the convention. Article 12 defines the functions of the secretariat, which will be carried out by the secretariat established by the convention.

Article 13 provides that funds required for the operation of the protocol will be charged against contributions from its parties, and that financial rules are to be adopted by consensus. Thus, the protocol itself contains no mandatory financial obligations, but would commit the United States in principle to payment of its fair share of the future expenses of the secretariat, meetings of the parties, and panels of experts. Costs associated with these activities are likely to be relatively small and are capable of being covered with presently projected agency budgets.

Article 14 states that provisions of the convention relating to its protocols shall apply to this protocol. Article 15 sets out the dates and places where the protocol is open for signature.

To ensure that the protocol is effective and the economic burden of the controls is equitably shared, article 16 provides that the protocol will enter into force only when 11 countries representing at least two-thirds of global consumption have ratified the agreement. The protocol is to enter into force on January 1, 1989, provided these conditions have been fulfilled and the convention has entered into force. In the event these stipulations have not been fulfilled by that date, the protocol will enter into force 90 days after the conditions have been met. The effective date of the freeze would in that case be delayed, but the specified dates for the reduction steps would remain effective.

Committee Action

The Montreal Protocol on Substances that Deplete the Ozone Layer was referred to the committee on December 21, 1987.

On February 17, 1988, the committee held a public hearing and received testimony from the following individuals: (1) The Honorable Robert T. Stafford (R-Vermont); (2) the Honorable John H. Chafee (R-Rhode Island); (3) the Honorable Max Baucus (D-Montana); and the Honorable Lee M. Thomas, Administrator of the Environmental Protection Agency.

Immediately following this hearing, the committee considered the protocol at a business meeting and voted by voice vote with a quorum present to report it favorably to the Senate for its advice and consent.

Entry Into Force

Article 16 of the protocol states that the protocol will enter into force only when 11 nations representing at least two-thirds of the global consumption of the controlled substances have ratified the agreement. As of February 18, 1988, only Mexico has ratified the protocol.

Text of Resolution of Ratification

Resolved (two-thirds of the Senators present concurring therein), That the Senate advise and consent to the ratification of the Montreal Protocol on Substances that Deplete the Ozone Layer, done at Montreal on September 16, 1987, to the Vienna Convention for the Protection of the Ozone Layer.

APPENDIX

EXCERPT FROM HEARING OF FEBRUARY 17, 1988

The Committee met at 10:02 a.m. in Room SD–419, Senate Dirksen Office Building, Hon. Claiborne Pell, Chairman of the Committee, presiding.

Present: Senators Pell, Kerry, Adams, Helms, Sanford, Lugar, Boschwitz, and Pressler.

The CHAIRMAN. The Committee on Foreign Relations will come to order.

Today, in order to save time I will ask that my statement and that of Senator Helms be inserted into the record as if read.

[The prepared statements of Senators Pell and Helms follow:]

OPENING STATEMENT OF SENATOR PELL

Senator PELL. Today, the Committee meets to take testimony on the Montreal Protocol on Substances that Deplete the Ozone Layer. This Protocol was negotiated under the auspices of the United Nations Environment Programs, pursuant to the Vienna Convention for the Protection of the Ozone Layer, which was ratified by the United States in August 1986. It is an important attempt by the international community to address a serious environmental problem.

There is general agreement in the scientific community that chlorofluorocarbons (CFC's) and other compounds may be destroying the protective layer of ozone that shields the Earth and its inhabitants from harmful solar radiation. Scientists predict a staggering rise in fatal and other skin cancers because of increased ultraviolet radiation over the next century, as well as other impacts on human health and damage to agriculture, water resources, forestry and wetlands. The purpose of this Protocol is to establish a multilateral regulatory regime to control the emissions of these ozone-depleting substances.

While many of us may argue that controls more stringent than those found in the Protocol are necessary to ultimately solve the problem, I believe that we can all agree that a final solution can only be achieved through a multilateral effort. Therefore, this Protocol is a significant step in the right direction and should be ratified by the United States.

OPENING STATEMENT OF SENATOR HELMS

Senator HELMS. Mr. Chairman, today we are holding a hearing on an issue which has the support of members from both sides of the aisle. The Montreal Ozone Protocol is the result of an agreement signed on September 17 of last year by 24 countries and the European Economic Community (EEC). That Protocol seeks to con-

trol and to diminish the release of hazardous chemicals and gases into the atmosphere which have had the serious result of reducing the ozone layer. This is an environmental issue that affects all Americans, and that government and industry must work together to resolve. Stratospheric ozone depletion carries with it major environmental risks for all countries. Business and industry have been supportive of governmental efforts to deal with this problem. A coordinated international approach to this global problem makes a lot of sense. I support this Protocol as a way of making possible the development of new and safer technologies and chemicals.

The CHAIRMAN. We hope to wind up consideration of this treaty by 11 a.m. That means we will be hearing from three Senators and the EPA Administrator prior to that time.

Senator Stafford, would you please come forward? I know that you have two other committee meetings simultaneously.

Senator Stafford, please proceed as you will.

STATEMENT OF HON. ROBERT T. STAFFORD, A U.S. SENATOR FROM VERMONT

Senator STAFFORD. Thank you very much, Mr. Chairman and members of the committee. I appreciate the opportunity to appear in front of you this morning with respect to the Montreal Protocol on CFC's.

I believe very strongly, Mr. Chairman, that the Montreal Protocol should be approved by the Senate as quickly as possible. This will demonstrate to the rest of the world that ozone depletion in the upper atmosphere is a serious threat to humanity and one which the United States intends to deal with quickly and in good faith.

We should not, however, stop with approval of this protocol. The protocol deals only with the threat posed by the global depletion of ozone in the stratosphere. It does not address either the ozone hole in Antarctic or the global implications of the chemistry there.

In 1987 the ozone hole in Antarctic lasted longer than at anytime since it was first discovered 10 years ago. It was early December, only six weeks short of mid-summer, before the hole in the ozone over the Antarctic closed. By the time it ended, the stratosphere temperature was 10 to 15 degrees colder than normal.

In the past several years, the hole has expanded its size, deepened its depth and lengthened its duration. If, as many scientists believe, it is due to a runaway chlorine reaction, humanity is now in a race against time to prevent the hole from lasting 12 months a year and quite likely disrupting the global patterns of atmospheric circulation.

Mr. Chairman, the need to re-examine the Montreal agreement in the light of these recent developments and findings is urgent, but the most urgent step is the need to approve this protocol speedily. I respectfully urge, Mr. Chairman, that this committee take the first step without undue delay.

I thank you very much for the opportunity to appear.

The CHAIRMAN. Thank you very much indeed, Senator Stafford, for being with us.

Our next witness will be my own colleague, Senator Chafee, the Senator from Rhode Island, who feels very strongly about these environmental matters.

STATEMENT OF HON. JOHN F. CHAFEE, A U.S. SENATOR FROM RHODE ISLAND

Senator CHAFEE. Thank you very much, Mr. Chairman and members of the committee. I have a fuller statement which I would submit.

The CHAIRMAN. It will be inserted into the record as if read.

Senator CHAFEE. Thank you.

Your interest and support, Mr. Chairman, of environmental issues is well known and appreciated, and your willingness to set this hearing in the midst of your busy schedule and consideration of the INF Treaty is just one more example of your commitment to protect our global environment.

All of us are indebted to Lee Thomas, Administrator of the EPA, and to Ambassador Richard Benedick and to a host of very dedicated staff members who helped make this treaty possible.

Any discussion about the Montreal Protocol to protect the ozone layer undoubtedly will reveal a fair amount of disagreement. But the common theme, the message that should be heard loud and clear, is this: The United States should ratify this agreement, we should ratify it as soon as possible, and we should press the rest of the world to do the same.

The disagreement focuses on a simple question: Does the Protocol go far enough? Does it adequately protect the environment?

Unfortunately, it does not. This became painfully obvious at a hearing we held in the Environment Committee last October.

Following that hearing, several of us wrote to Dr. Tolba, UNEP's executive director, and urged him to call an emergency meeting of the parties to review and respond to the most recent evidence on the hole over the Antarctic. That evidence tells us it is not enough to simply reduce our use of these chemicals.

Mr. Chairman, it is my intention to build on our earlier work in this area, including legislation that Senator Baucus and I introduced last year. We need to work on several fronts to achieve the ultimate objective of the protocol; namely, elimination of these harmful chemicals.

As a first step, I suggest we put together a resolution that the Senate can consider separate from the protocol but at about the same time. The resolution could be used to make several points.

First, the United States must continue to be a world leader in this area.

Second, we need to convince the rest of the world to ratify the agreement as quickly as possible.

Third, we need to work through the International process to speed up the agreement's reduction schedule and to go beyond the reductions already agreed to.

Fourth, if the International process will not move far enough or if it will not move fast enough, we have to be ready to impose new, more stringent requirements in this country.

Mr. Chairman, I recognize that unilateral controls are a tough pill to swallow but, when combined with stringent trade restrictions, they can be a powerful tool to bring other countries around.

In conclusion, Mr. Chairman, as an environmental regulation the Montreal Protocol has its flaws. Fortunately, it can be fixed.

As an International environmental agreement, it is an historic document and a significant achievement. As I said, we owe a great deal to those who made it happen: to Dr. Tolba, to Lee Thomas, to Ambassador Richard Benedick, and to those staff who worked so long and so hard to make it come about.

This Protocol deserves to be ratified by the United States and by the rest of the world as soon as possible.

I want to thank you, Mr. Chairman.

[The prepared statement of Senator Chafee may be found in the appendix.]

The CHAIRMAN. Thank you very much, Senator Chafee. Your leadership in this field is well known not only in our State but in our country. Thank you very much.

Seantor Baucus.

It is very nice to have you with us.

STATEMENT OF HON. MAX BAUCUS, A U.S. SENATOR FROM MONTANA

Senator BAUCUS. Thank you very much, Mr. Chairman. I know how busy you are in considering the INF Treaty, and I commend you for taking this short time out to consider this issue.

The CHAIRMAN. Well, in the long haul either a nuclear war or the absence of ozone will have the same effect on mankind.

Senator BAUCUS. In the long haul, that is correct.

Before I begin, Mr. Chairman, in addressing the ozone layer and the Montreal Protocol, I would like to say a few words about Administrator Lee Thomas, who will testify before this committee very shortly.

As a member of the Environment and Public Works Committee, I have had my run-ins with the EPA under this administration, including some differences with Mr. Thomas. When it comes to protecting the stratospheric ozone, however, I can tell you, Mr. Chairman, that Administrator Thomas has been a stalwart leader. He has held the line within the administration, opposing those within the administration who want to duck this problem, who do not want to address it head on.

I have the highest praise for the leadership of Lee Thomas and for the foresight and courage of Lee Thomas in first recognizing the problem and the long-range implications of the problem and doing something about it.

Mr. Chairman, I hope this committee takes very quick action. The United States has generally led the battle to protect the earth's stratospheric ozone from damaging chlorofluorocarbons. For example, in June of 1975, over a decade ago, a Federal Task Force on Inadvertent Modification of the Stratosphere issued a report on chlorofluorocarbons in the environment. That report stated, and I quote:

"The task force has concluded that chlorofluorocarbons released to the environment are a legitimate cause for concern. It has also concluded that unless new scientific evidence is found to remove the cause for concern, it will seem necessary to restrict the use of fluorocarbons 11 and 12 to replacement of fluids in existing refrigeration and air conditioning equipment and to closed recycle systems and other uses not involving release to the atmosphere."

That was a strong statement 13 years ago, and some of you might recall that this was not a study by a single government agency or environmental group. Rather, it was a major interdepartmental effort to examine the effects of CFC's on the environment. Their findings, while criticized, have never been refuted.

In 1978, the United States, Canada and a few other Scandanavian countries took action. The use of CFC's as a propellant in aerosol cans was banned. That gave the world a brief respite, breathing time to become educated on the seriousness of this emerging enviromental crisis.

Today we know what we are facing. It is this understanding that leads us to the Montreal Protocol. I, for one, am becoming increasingly concerned that the protocol, however, may be too little too late. The Montreal Protocol may not do enough to help avert serious environmental damage.

It is also clear, however, that if there is any hope of lessening the damage to our atmosphere, the protocol must be ratified, and soon.

It accomplishes three objectives. First, it caps production of CFC's and calls for phased reductions in emissions. This will provide the incentives industry needs to develop substitutes.

Second, the protocol entices lesser-developed countries to join the agreement. It promises that substitutes will be available for their use. This is critical if meaningful worldwide reductions are to be achieved, for without the participation of lesser-developed countries of the world, any controls we implement will be meaningless.

Third, the protocol provides for the use of trade sanctions against nonparticipants. In short, the agreement has some teeth.

Last week, Mexico became the first nation to ratify the Protocol. 11 countries, representing two-thirds of the world's CFC production, must agree to the Protocol for it to take effect.

I believe it is vital for the success of this agreement for the United States to take the leadership role and make the protocol become reality. We are viewed by our global neighbors as a world leader in the protection of the environment, and we are a major producer of the offending chemical. Thus, it is the United States which holds the ultimate key to the success of the Montreal Protocol.

We need to move quickly. We need to ratify the protocol and then actively seek participation by the rest of the world.

Last fall, the world was confronted with new evidence supporting the need for even more immediate action. An expedition to investigate the Antarctic ozone hole conclusively linked CFC's to ozone depletion. This finding is a significant scientific discovery; but more important today's discussion, this finding is significant to the Protocol because the Protocol did not consider the Antarctic ozone hole.

This raises questions about the adequacy of the Protocol. What does the hole mean for the rest of the world? What does it mean for the southern oceans?

To answer these and other questions, we must look beyond the fall expedition to the behavior of the ozone hole at the beginning of December.

Each year, the hole began to dissipate and disappear in early November; that is, until last year. For the first time, the ozone hole lasted until the first week of December. If the hole persists a few more weeks into the Antarctic summer, the only time in the past when the hole has disappeared, we could find ourselves with an ozone hole that is permanent.

I am troubled by the fact that the earth's protective shield has been destroyed for a few months each year. The possiblity of having a permanent hole caused by a manmade luxury chemical is intolerable.

A second phenomenon occurred just last December which also raises red flags; that is, the fact that the hole may also appear in the north affecting global ozone levels. This raises questions also about the effect increased ultraviolet radiation will have on ocean organisms generally and other direct effects.

An ozone hole over the darkened ice sheet of Antarctic when the sun is low presents a much different threat than unrestrained ultraviolet radiation pounding on the surface of the ocean when the sun is high in the sky. In short, we have reached the point where CFC's are directly affecting the food source for a major portion of the fisheries in the southern oceans.

While this scenario is just conjecture at this time, it is plausible. I raise the issue again because it is likely that it could have an effect on the entire world. As you know, an investigation is now under way that is, it is in the planning stages to address that. The results of last Fall's expedition will be available for peer review later this Spring.

The time is short, Mr. Chairman. I believe eventually we will have to take tougher actions. In the meantime, I strongly urge the adoption of the protocol.

[The prepared statement of Senator Baucus may be found in the appendix.]

The CHAIRMAN. Thank you very much indeed, Senator Baucus, for being with us and for your own role in this whole very important area.

Senator BAUCUS. I also, Mr. Chairman, would like to very much commend Senators Stafford and Chafee as well as the Senators I recognize here before us, Senator Kerry and Senator Sanford, as well as yourself, who have worked assiduously and with great foresight. I applaud you and commend you. Thank you.

The CHAIRMAN. Thank you very much.

Senator KERRY. Thank you very much, Senator Baucus. We appreciate your detailed testimony, also.

The CHAIRMAN. Thank you for being with us.

Next, we will hear from Administrator Lee Thomas.

Would you please come forward?

Mr. Thomas has done a tremendous job as the Administrator. He has the respect of those who are in the environmental field and in-

terested in the environment, and he has the respect of those who work under him as well. That is the sign of a good administrator, one who has the respect of those for whom he works and of those who work for him. You enjoy both.

Would you proceed as you will, bearing, in mind the time constraints we are under.

STATEMENT OF HON. LEE M. THOMAS, ADMINISTRATOR, ENVIRONMENTAL PROTECTION AGENCY

Mr. THOMAS. Thank you very much, Mr. Chairman. I appreciate the opportunity to be here with you and members of the committee. I do have a full statement which I will submit and, with your permission, I would just highlight that statement.

The CHAIRMAN. Fine. It will be inserted in the record as if read.

Mr. THOMAS. First, let me commend you. I appreciate very much the fast action that you are taking in holding this hearing and reviewing the Protocol which was signed in Montreal, clearly recognizing, I think, the importance of that and the importance of fast ratification.

Second, I would like to commend——

The CHAIRMAN. If I could interrupt for one moment, it was Senator Kerry who took the lead in the committee of urging that we have this hearing today, so he should get full marks on that.

Mr. THOMAS. Certainly, and I commend all members of the committee, both for the hearing and for the support which we received throughout the negotiation process from members of Congress on both the House and Senate side. It was greatly appreciated as we went through a difficult negotiation process during the last year.

The issue of stratospheric ozone depletion, as has been indicated by Senator Baucus and others, has been of concern for the last two decades, particularly the last 10 years. The effect of chemicals like chlorofluorocarbons and halons on the stratospheric ozone layer has been one that has been debated but I think conclusively agreed upon by scientists around the world.

It prompted Congress to take action when they amended the Clean Air Act back in the late 1970's, and it prompted the United States to take action back in the late 1970's/early 1980's time period to actually deal with it through unilateral action in this country, a ban on nonessential uses of aerosols or aerosols containing chlorofluorocarbons.

The reason the United States took action was because of the concern of the effects of depletion of the stratospheric ozone layer, particularly the increased UVB radiation that would result and the impact that would have on health, particulary skin cancer, but also the ecological effects, some of which we know far less about than we do the health effects but would probably prompt and has prompted far greater concern as to what would be the effect of the impact on the ecology of this world from the increased UVB radiation that would result from a depletion of the stratospheric ozone.

So the United States did take action in 1980 by banning the nonessential uses of aerosols, and it had an impact in the United States. We saw CFC use go down.

Where do we stand today, however? We find that few countries followed suit. Canada did. We saw some action in other countries, but none near as dramatic as the ban in the United States.

The result is we see today not only a level of CFC use throughout the world that exceeds where we were in 1980 but a continuing growth rate approaching about 3 percent a year, particularly in developing countries and countries that have not seen the uses of CFC's that we have seen in the past and who are now beginning to use those chemicals far more aggressively.

We also see, at least from our models, that if this continued growth goes unabated, that we will see a depletion of the stratospheric ozone layer that will reach possibly 40 percent from today's levels by the year 2075; clearly a dramatic depletion. Impacts as well would be dramatic.

So the conclusion that was reached both by the United States and by a number of other countries is that we not only needed a solution to the problem, we needed a global solution, and we needed all countries to participate in both recognizing the problem and recognizing that they had to be a part of the solution.

So the United States, particularly as a party of the United Nations Environment Program effort, launched an overall program to deal with stratospheric ozone depletion.

The Vienna Convention that this country ratified a year ago was a first step in that which brought the countries of the world together to look at the scientific issue of ozone depletion and set up the process for negotiation of a control protocol.

The fact that we have now moved through and developed a control protocol, I think, is a testament to the fact that the United Nations Environment Program, with the leadership of the United States and other countries, has moved effectively.

What were we looking for as far as this agreement is concerned? There were four basic objectives.

First, a global agreement with maximum participation; that is, participation first by the developed countries, particularly those that are the heaviest producers and users of CFCs, the United States, Japan, Common Market countries and the Soviet Union.

Also, maximum participation by developing countries, rapidly developing and undeveloped, those that are moving to use CFC's more aggressively.

The second objective was broad coverage as far as chemicals are concerned, the whole CFC family and the family of halons.

The third objective was to try to get an agreed-upon reduction tied into the Protocol that would set out a schedule of reductions that would end up with a reduction that would insure that depletion did not occur; in other words, a status quo as far as the ozone layer is concerned for the long term but also which is strong enough to promote the development of substitutes, which we think is the long-term answer as far as this problem is concerned, the development of substitute chemicals and substitute processes that will not result in depletion of the stratospheric ozone.

The fourth objective was a process to be incorporated in this agreement for future reviews so that as our scientific knowledge is improved, we can review that information and take further action as required.

The results were that we ended up with a Protocol that I feel meets all four of those objectives. It was not an easy process. It was one that was give and take on many parts.

The first part of the process resulted, I think, in a basic scientific consensus around the world on the need to take action, the major countries and the developing countries, extensive interaction as far as scientists are concerned. I think once we reached Montreal, there was virtually no debate over the fact that there was a problem that required a solution.

So the debate, then, was on the concluding solution. That solution met the objectives I laid out. It is a good global agreement. The result is we had 24 countries sign that agreement in Montreal, and we have had an additional six sign it since then. Mexico has actually moved through the ratification process. So it is moving forward quickly.

The entry into force date projected of January 1989 I think is feasible. If 11 countries representing two-thirds of the world's consumption sign and ratify that agreement by that date, it will go into force. I think there is a good likelihood of that.

Recent conversations I have had with representatives of Japan, Soviet Union, Common Market all have them working on about the same time schedule as the United States for review of not only the protocol for ratification purposes but also the development of their implementing regulations.

I think it is a tribute to the fact that we had strong support from the United States as we went into this negotiation; the administration's strong commitment to get a global agreement; strong support from Congress; strong support from U.S. industry and U.S. environmental organizations; and a good negotiating team.

Richard Benedick from the State Department did a very good job throughout the negotiating process of heading that team.

I think the observers we had from Congress provided opportunity for input from the congressional branch throughout that negotiation process. Clearly, the rest of the world knew the U.S. was committed to a strong agreement.

I think that leadership can be demonstrated further by the fact that we are moving very quickly through the ratification process. Ratification by the United States will send a very strong signal to the rest of the world and particularly the developed countries, Japan, Common Market, Soviet Union, that the ratification process will move quickly if they will move as quickly as we are moving.

So, in conclusion, it is, I believe, an historic agreement; it is a strong agreement. Rapid ratification, I think, will continue to demonstrate U.S. leadership in this area. I think it also provides the opportunity for adjustments if adjustments are needed based on continuing input from our scientists around the world.

I appreciate the opportunity to be with you today and to respond to any questions you have about the protocol and the process that led up to the protocol.

Thank you.

[The prepared statement of Mr. Thomas may be found in the appendix.]

The CHAIRMAN. I would like to yield to Senator Kerry, who pressed most vigorously in the committee for this hearing.

Senator KERRY. Mr. Chairman, I appreciate your comments, and mostly I appreciate your holding this hearing. I know you have been incredibly committed to the movement of the INF Treaty, and the hearings have been most important and, in fact, some of the best hearings we have had.

I may have asked for this, but you granted it, and your interest in this has been much longer than mine. Over the years that you have been here, you have really been a leader in this area. So I am very appreciative of you, and I know that all the groups that have been pressing hard for this are appreciative of you, also.

Mr. Thomas, I appreciate what you have done on this and certainly second the comments of Senator Pell about your tenure and your leadership in this area.

I think a lot of us, however, remain deeply concerned. I think this is a good treaty. I think it is a very important protocol, and I have pressed hard to see us move on it because I think that there is concern among the European Community that if the United States does not move, then clearly our leadership on this is questioned, and whether or not they will move is then in doubt. The whole thing, while we have this signing which 24 nations have joined, could fall apart.

So our leadership is yet to be tested on this issue, and that is why I think it is so important that we move it out of the United States Senate and get this ratification process under way to meet that January 1 target date.

Fifty percent reduction is a beginning. It is a very important start. I guess, given where we were a few months ago when Interior Secretary Hodel suggested the solution was the personal protection plan, the Rayban plan, where we were all going to put on additional sunscreen lotion and wear sunglasses and hats, we have moved a long distance in getting to a 50-percent reduction. I am glad the administration backed off of the Rayban plan and moved in this other direction.

I think the concern that many of us have, as I think Senator Baucus articulated in his opening, is that a 50-percent reduction leaves us with a level that is still unacceptable, that the current scientific data indicates the life span of the chlorofluorocarbons is such that there will be continuing damage even if we stop today at 100 percent. If we stop at 50 percent, are we really getting at it?

The original proposal of the administration was a 95-percent reduction, and for the record I would like to explore this just a little bit while we wait a moment while others arrive before we vote here.

Question No. 1: Why did we move away from the 95 percent, and will the administration continue to move towards the 95 percent or larger reductions in the future?

Mr. THOMAS. Senator, I completely agree with you and the point you make about ratification and leadership. I think the rest of the world does look to the United States on this issue, as it does on many others.

I know repeatedly not only the Common Market but also Japan is looking to what the United States is doing as far as ratification is concerned. So the movement of our ratification process, I think, will expedite the ratification process in those countries. They take

comfort from the fact that this hearing is going on, that our regulations have been developed and that they are on the same timetable.

So that I think that your point is very well made about leadership and ratification.

The commitment that the administration has to this issue is very strong and has been throughout the negotiations. I participated from the beginning. I also participated in all the sessions and internally in the administration as we worked through this issue.

I must say that the press accounts that you indicated being attributed to alternative plans and attributed to Secretary Hodel were certainly not consistent with any of the discussions I had with Secretary Hodel. He was as committed as I was to trying to deal with a global agreement on this.

We did have a lot of discussions about the science. We had a lot of discussions about what kind of measures may be taken as far as mitigation is concerned when we look at what impacts those would have. I thought those were all legitimate discussions.

I think we all ended up with a strong commitment to the Protocol signed in Montreal. One of the things, quite frankly, as the head of the delegation that negotiated the agreement in Montreal, I had the strongest agreement or support of any delegation head there. I had not only full support of the administration with the strongest support from the President but the support from the Congress, as evidenced by joint resolutions, and it let me go into that negotiation with probably the strongest hand of anybody there.

The result was, I do think, a strong agreement. The point about 50 percent, 95 percent, is one that was a tough issue for negotiation. We had laid out 95 percent as an overall goal, that we would like to see the virtual elimination of these chemicals over the long term.

There were other people who did not want to go beyond a freeze. They felt that the science was such that we could not support anything beyond a freeze. I am talking about other countries that felt that way. Some very important countries to the negotiation were interested in a freeze only. Initially, the Common Market countries were talking about a freeze only. Japan was not even participating in the process.

Eventually, we not only brought everybody into the process but we got everybody to agree to a 50-percent goal, which we felt would accomplish two things.

One, it was a strong enough goal to clearly begin the incentives for industry to develop substitutes, and we have already seen that. We have already seen a dramatic movement on the part of industry in the United States, and I feel sure it is going on in other countries, to bring substitutes to the market. We have seen it far quicker than we thought would happen.

But the main thing it accomplished is it allowed us to incorporate all the countries into the Protocol, all the developing countries meaning all the big producers, all the big consumers. We got all the Common Market countries and the Common Market as an entity to sign. We got Japan to sign. We got the Soviet Union to sign.

It was far more important to us to get all of those countries to buy into this agreement as a foundation for action than it was to hang out on one issue like the long-term goal.

The second thing we got is a clear commitment to a future process that would review on a periodic basis the scientific information, like the Antarctic information. It is very troubling information but we got a process to review that. If, in fact, that information says we need to revise those goals, there is a process then to go back to the table to revise those goals. We got that built into the protocol, which was a very significant step.

So I felt, as I concluded that process, that I had accomplished the objectives I set out.

Senator KERRY. I do not quarrel with that, incidentially, I just think it is very important to understand both for the record as well as for future interests, having achieved that particular process and having achieved that goal, where we want to go.

I take it from your answer that you are still saying that while you achieved your goals which you think are important, and we agree, 95 percent or more is still where we ought to be going.

Is that accurate?

Mr. THOMAS. I have said that ultimately I would like to see us in a position where the chemicals that were being used would not have a depletion effect as far as stratospheric ozone layer is concerned. I think the way to do that is to develop alternative chemicals in virtually all uses.

I think setting a process in place that provides the incentives for industry to do that is the way to move. I believe that is exactly what is going on.

So as I worked the process and as I got into the process, I reached the conclusion that that 50-percent goal tied into the Protocol would accomplish what I wanted to accomplish with the 95 percent goal that I was pushing initially.

So I think we have, in fact, the process under way that needs to be in place.

Senator KERRY. I do not think this is going to happen, but if for some reason there was a failure by the EC countries to ratify this, would the United States still adhere to the provisions of this agreement nothwithstanding?

Mr. THOMAS. The way have developed our proposed regulations that we have actually proposed to implement this protocol is that they would be implemented if it were ratified.

Now, if it were not ratified, as you indicated, such as the Common Market countries not signing on and under the current protocol it would not be ratified if that happened, then the United States would have to take another look. The United States would have to then go back and, I would think under the law as I read it we would clearly be in the position of having to look at taking unilateral action again in the United States.

I think that would be a mistake, but I think we would be in a position of having to take a look at doing that.

Senator KERRY. Which would be a mistake? For us to take unilateral action?

Mr. THOMAS. To take unilateral action.

Senator KERRY. Why do you believe that?

Mr. THOMAS. Because I think what is needed here clearly is a worldwide solution, and I think what happened in 1980 has the potential of happening again; that is, when the United States takes action, everybody else lays back, and they have all the incentives not to take action. They use the U.S. action as an excuse. Well, the United States is going to take care of the problem; therefore, we do not have to take care of the problem. The incentives as far as economics are concerned are all in favor of them not taking action.

So from the beginning, as I got into this issue, I came to the conclusion that what we needed was a global agreement as opposed to a unilateral agreement. I thought, in fact, if we took unilateral action it would undermine the solution that was needed for this problem.

Senator KERRY. Let me ask you this way. Would unilateral action have an effect on the problem?

Mr. THOMAS. It would have an effect on the problem, and you can just do the calculation. The United States accounts for about 25 percent of production and consumption of these chemicals. So if you took action in the United States——

Senator KERRY. It will have an effect.

Mr. THOMAS [continuing]. It will have an effect, but obviously, a far smaller effect than a global agreement.

The problem I see is if you took that action in the United States, just as we did in 1980, it then gives comfort to the other countries, just from the point of view of action has been taken by the United States, therefore we do not need to sign on.

Senator KERRY. I would question that.

Mr. THOMAS. It is a legitimate debate.

Senator KERRY. It seems to me that it is clear enough to every country and anybody of sound scientific mind and probably of any common sense that a 25-percent reduction or an impact of 25 percent is not enough. All it is, is a demonstration of good faith and leadership.

It seems to me that if the United States sort of throws up its hands and says, well, the others do not want to do it so we are not going to take leadership on it and we are not going to underscore the importance, then we have really kind of signed a death warrant, if you will, or at least walked from the responsibility with respect, to all the gains you have made in this protocol.

Mr. THOMAS. I think that was the argument in 1979 when the United States took unilateral action, and the rest of the world did not follow suit.

Now, it remains to be debated as to whether we would have to do that again. We may have to do that again and try that path again.

Frankly, I do not think we are going to have to try that path. I think if we complete this ratification process, we now have the rest of the world on the track of ratification, and we will have a global agreement.

One of the things I have found as I have worked this issue over the last several years, there was far less concern in the rest of the world than there was in the United States about this issue. I think that concern has gradually increased but still is not anywhere near to the extent that there is concern in the United States.

So the feeling that if we took action because of our concern about the environmental issue that the other countries would follow suit, I guess I have become a pretty strong skeptic of that as a result of dealing with those other countries on this issue over the last several years.

Senator KERRY. Do you agree, Mr. Thomas, that it is true that scientific data shows that CFC's are, in fact, a major contributor to the Antarctic hole?

Mr. THOMAS. From what I have been able to read of the latest expedition, clearly chlorine or fluorine from CFC's appears to be a major part of that phenomenon. As to how that process comes out, whether that is unique to the situation in the Antarctic, whether it can transfer to the rest of the globe or whether we just need to be concerned about that depletion over the Antarctic and how to deal with that, I think we are going to know all of that over the next several months.

We have a major effort under way, as you know, led by the United States to deal with what is going on down there. We have a conference in May of this year that is jointly sponsored between the United States, the United Nations Environment Program and a number of other countries assessing the data that came from that expedition. I think that both then and in the late summer and fall, we will get conclusions from that.

I know in recent discussions I had with the director of the United Nations Environment Program, he is anticipating, as I think he wrote to a number of Senators who were concerned about it, that that process will then determine whether additional action is required as far as this agreement is concerned.

So we have that scientific process under way, and I think our scientists will be able to draw conclusions from it over probably the next 6 months.

Senator KERRY. How serious would you, at this time, categorize the Antarctic ozone hole?

Mr. THOMAS. I think it is very serious. I think as far as the events that have led up to this protocol, it is as serious as anything that we have seen as far as having implications for the stratospheric ozone layer.

So if the conclusion comes out that we have a phenomenon there that scientific consensus says has major implications for our projections on what is going to happen to the rest of the world as far as the ozone layer is concerned, I think it has major implications for this agreement.

Senator KERRY. Can you share with us what scientific evidence shows concerning the role of CFC's in the greenhouse effect?

Mr. THOMAS. There is a relationship between CFC's and the greenhouse effect or warming, in that these chemicals, to a large extent, are warmers themselves. As we deal with controls, we will deal with warming to a certain extent, although they are clearly not of the size of, say, carbon dioxide as far as warming is concerned; but there clearly is a relationship between the two.

As a matter of fact, as we have done research in the United States, as we have begun to look at where we are as far as our policy review on warming is concerned, it is an interrelated effort with the CFC issue as it is worldwide.

I just finished a negotiating meeting in the Soviet Union. We have worked with them extensively on environmental issues, and one of the areas in which we have worked has been this one; that is, global warming and ozone depletion. We just negotiated a new agreement for the coming year that ties them even closer together with far more extensive joint work on the warming issue but tied in with the CFC issue.

I think, for instance, the work we have done with the Soviet Union was a major contributor to them participating very positively in this Montreal Protocol both in the negotiation process as well as in signing it.

Senator KERRY. Can you tell us whether or not there are other incentives available by which we might leverage other countries action on this?

Mr. THOMAS. The biggest incentive, I think, as far as other countries taking action is concerned is actually economics. That has to do with trade between us and those countries for their products into this country, particularly with our major trading partners, the Common Market and Japan, but other countries as well.

As you know, in the protocol we built in things that basically said what we want to do is maintain a level playing field with those big trading partners; that is, we want to maintain where we are today with where we end up. We want no one to have an advantage or a disadvantage out of this process between these big, big producers.

We also, however, want to tie in provisions to get as many other countries in as possible by building in trade sanctions, so that if a country does not sign on, then we do not want to allow our country to be a market for their product that contains CFC.

Frankly, the final negotations in Montreal were heavily oriented towards trade issues. I know as far as my team is concerned, members from the U.S. Trade Representative's Office as well as the Commerce Department and legal advisers from the State Department were all critical members of that team, because we were negotiating issues with the Common Market and Japan, and the things that moved them very strongly were trade issues and economic issues.

I think that is where the strongest incentives to move other countries along with us lie.

Senator KERRY. Some people have made the argument that until some of those countries get their share of the pie and have sort of reach parity in terms of our comforts that are provided by CFC-producing entities, it is difficult to create a leverage or an incentive for them to go along with you.

Is that what you are saying in this trade emphasis?

Mr. THOMAS. Well, that is some of it. There was an equity argument with developing countries when you get into this issue of CFC control, and it came out in these negotiations strongly; that is, countries who are beginning to industrialize, beginning to have products that contain refrigerants, such as refrigerators and air conditioners and other products, say why should we not have the benefit of the products that you developed countries have had for many years. Why should we have to now restrict like you? You are

the ones who have benefitted from these chemicals; let us benefit for a while.

Frankly, the developing countries section of this Protocol recognizes that issue and says yes, we will build in some differential as far as developing countries are concerned, as far as timing when they get into the agreement, as far as allowing some increases as far as their use of these chemicals are concerned, but we did it in a way that we felt would not have any damaging effect as far as the overall strength of the agreement but, frankly, dealt with the equity issue so that we could bring in those developing countries and, therefore, would not have those developing countries beginning to put in place independent production facilities.

We did not want to see them begin to put in their own production facilities. Almost all of them rely on imports from other countries. So we wanted to give them some benefit. There was an equity argument. We did not want to have a significant impact as far as ozone depletion is concerned, and we wanted to eventually get them to buy into the overall reduction scheme which everybody else was buying into.

So we did have to come to grips with that, and that is built into the protocol.

Senator KERRY. As I listen to you, I guess you are really underscoring the dilemma here, and it bothers me a lot. It comes back to my opening comments.

This is clearly a step forward. There is no question about that. It is one we have to take if we are going to progress further. I hope my colleagues in Congress will share that when it comes to the floor and we vote, because it is absolutely vital that the United States move forward on this and take the lead and underscore it.

We have to be sensitive, clearly, to the equality issue. The problem with that is as you said, CFCs are heat retaining. What is up there already is at such a level that for the next 100 years it will continue to do damage at the current rate.

Mr. THOMAS. Most of these chemicals have life expectancies of 75 to 100 years.

Senator KERRY. Which means that what we have already done is damaging today at the rate we believe it is damaging will continue for the next 100 years.

Given the fact that the hole is already enlarging at the current rate and we do not even understand the geometric progressive rate by which it could destroy in those next 100 years, we are kind of backed up against the wall, realistically.

Is that fair?

Mr. THOMAS. I do not think it is as negative as that from a depletion point of view. The models we have been using, which may be modified as a result of the scientific data coming out of the Antarctic, do not predict depletion of the stratospheric ozone layer if we go forward and implement the provisions of this Protocol. In other words, that would stabilize.

But as I indicated, there are two caveats to that: One, does the Antarctic hole data suggest that those models should be revised; and, two, are the assumptions that we built into our models adequate.

Senator KERRY. One final comment. The Chair has questions, and he has been very generous in letting me go on here.

I just would say to you, and I do not want to raise a whole other issue but I have been very involved in the acid rain issue for about 5 years now. You know, we began with fish. Then we moved from fish to crops. Then we went from fish and crops to statues and to other effects. Then we finally understood particulates in the air and human beings. Now we are reading reports about cancer, et cetera.

Each report takes us a step down the road to further negative consequences. I just hope our common sense is going to mandate that we press as hard as we can here to not wait for the next model to say, oh, oh, we made a mistake, this thing is really way beyond us, and only then will we move to do something.

I applaud your leadership on this. It is awfully hard to get 24 nations sitting down together to do this, especially with the economic interests that are at stake. You are genuinely to be congratulated.

But I hope we are not going to lose that 95-percent concept, and I hope we are going to proceed forward no matter what the others do because we have to offer leadership on this.

Thank you, Mr. Chairman, very much.

The CHAIRMAN. Thank you, Senator Kerry. I share your interest in this field and applaud the emphasis there is today on domestic environmental concerns. But I think that the international concerns are far more important in the long haul than the domestic environmental concerns.

I am struck by how many people are riding the bandwagon of domestic environmental problems but ignoring the international environmental problems, which are really much more substantial. This is true in the Congress. There are relatively few of us interested in the international side and many in the domestic side.

Along that line, I take particular joy in having been responsible for the no weapons of mass destruction on the seabed floor and the environmental modification treaties which started out as Senate resolutions.

Instead of the idea generating from the administration, it originated in the Senate. I still hope that the administration will support my idea of an international environmental assessment treaty, I have been working with Dr. Tolba for some years now on this idea. It would mean that the nation engaged in activity environmentally harmful to its neighbors in the global commons area would have to check it out with UNEP.

This is a little off the subject, but would you relate to me the administration's attitude toward that proposal, with which I know you are familiar.

Mr. THOMAS. We have participated in discussions in the United Nations Environment Program format on the concepts incorporated in that treaty.

Basically, the approach we have been supporting which is one that has taken on a good bit of emphasis, I think, under the later program is one of technical assistance and technical support as far as environmental impact assessment is concerned, but particularly the countries that do not have that incorporated into their existing program; that is, many developing countries.

There is a proposal that is currently being reviewed, and the United States participated in a session within the last two months. It is kind of a second opinion environmental impact assessment capability. That would be if a country requested of UNEP or whatever international managing body this environmental assessment review, then one could be done with technical experts, and that could be provided.

This is a concept that is currently being discussed. The Netherlands, as a matter of fact, has been a country that has promoted it very strongly as a country that would even be willing to provide some support for it. It has been brought into the DECD format for discussion and has most recently been discussed in the UNEP concept.

It has some merit, I think, as far as dealing with environmental impact and particularly in developing countries.

The CHAIRMAN. I thank you for that. I must say, I think Dr. Tolba and his deputy, Mr. Mansfield, deserve a huge amount of credit for the work they are doing in the international field. They are unsung heroes. If you focus on domestic environment, you are a hero. If you focus on the world, you are sort of an abstractionist. I think they deserve congratulations.

Mr. THOMAS. I agree with you, Mr. Chairman. You know, Bill Mansfield is from the United States. I am well aware of it. I have worked with him for years.

He worked in our agency before he went to UNEP. I agree with you. Both of them are doing a fine job, and I think the Montreal Protocol is a real tribute to the work of both of them.

The CHAIRMAN. I have just a couple of very elemental questions.

Mexico is the first to ratify this protocol, and yet Mexico City has the most pollution of any city, so far as I know. Is that what spurred them on to ratify it, in your view?

Mr. THOMAS. I am not sure exactly what spurred them on in the ratification process here. Clearly, they have major environmental problems in their country.

The CHAIRMAN. Another question. In connection with the hole in Antarctica that the British scientists discovered, there are no people shaving with fluorocarbons and down there, why would the hole have been produced where there are no human beings.

Mr. THOMAS. That is exactly what the scientific assessment is looking at; that is, clearly the chlorofluorocarbons that are emitted from one part of the world end up covering the entire world. It is not something that just stays over our continent if we emit that chemical.

So the transfer of those chemicals from the developed part of the world to the undeveloped part, like Antarctica, is a phenomenon that occurs. How that transport occurs and what interaction is going on down there is what the scientific assessment process is all about, and does that then have implications beyond just Antarctica? Those are the questions that hopefully we will begin to get answers to over the next several months.

The CHAIRMAN. Finally, which countries opposed the United States 95 percent reduction position during the negotiation of this protocol.

Mr. THOMAS. I would claim a good bit of credit for ending up supporting the 50 percent goal. There were a number of countries, as I indicated, that did not want to go beyond just a freeze; in other words, zero.

I had proposed a step back; in other words, let us start with a freeze, let us go with a reduction of 20 to 30 percent; let us then go to 50 to 60 percent; let us end up with a goal of 95 percent if needed with an assessment process along the way. I looked to the time frame of maybe 15 years.

We ended up getting the rest of the world to buy most of that, and I felt very comfortable with then supporting the 50-percent goal in the 10-year time frame and also with the assessment process that would be incremental to determine whether anything additional was needed.

I thought that was very strong and comparable to the overall 95 percent goal I had been pursuing.

The CHAIRMAN. Thank you very much indeed.

The agenda or program of our committee is that we will be going to a business session at 11 a.m. or when we get a quorum. I do not know if any of the Senators who are here have any more questions.

Senator Sanford?

Senator SANFORD. I apologize for having to step out, but I had to go to a Judiciary Committee meeting. I appreciate very much your testimony, which I have not yet had a chance to hear. If you have answered this question or have already been asked this question, do not respond to it again, please.

In cutting the use of the CFC's from the present use to about 50 percent, does that accomplish the purpose of a 50-percent reduction?

Mr. THOMAS. It accomplishes, really, two big objectives that we had. One was to set a goal that we felt that was realistic, that could be reached. This 50-percent reduction in a 10-year period of time we think is realistic.

Second, it will be strong enough to promote the development of substitutes for these chemicals, and we have already begun to see that process work.

So it accomplishes those two goals. We think it will, in fact, if our models hold up, result in a stabilitization as far as ozone is concerned; that meaning no depletion in the long term. But the main thing is the prompt development of substitutes.

Senator SANFORD. In the meantime, we will not be without air conditioning in the Capitol?

Mr. THOMAS. Clearly not.

Senator SANFORD. Is there a way to dispose of CFC's without emitting them in the atmosphere

Mr. THOMAS. Actually, a big part of the solution, particularly in the near term, is conservation and recovery. Industry is working hard in that area; that is, new processes which are closed-loop processes, new procedures to prevent the emission of these chemicals. I think a major conservation and recovery effort in this country as well as in other countries can have a significant impact.

Senator SANFORD. I had one other question just out of interest.

Since 1960, the ozone depletion was 40 percent at the South Pole. Why the South Pole?

Mr. THOMAS. We have a major scientific review under way now dealing with that issue and trying to come to a conclusion on that as to exactly what is going on and why it is going on. I think it is something that hopefully this year we will get far more definitive answers than we have now in determining that.

Senator SANFORD. Why has the effect accumulated in that area?

Mr. THOMAS. We do not know. It may well have to do with, and probably a major part of the phenomenon has to do with the formation of ice crystals interacting with these chemicals, but we do not know definitively what the answer is to that.

Senator SANFORD. How about the North Pole?

Mr. THOMAS. We, as a matter for fact, have not seen a similar phenomenon, although scientific work is under way assessing the situation there to determine whether we have similarity; but I cannot answer those questions.

Senator SANFORD. One other question. Have we seen any indication of the effects of that ozone hole? Is the ice melting faster?

Mr. THOMAS. No, sir, not to my knowledge. I think the effect you would see as far as Antarctica is concerned would probably be ecological effects, and I do not have the answer to that.

Senator KERRY [presiding]. Senator, do you have any more questions?

Senator SANFORD. I believe I may have one more.

[Pause.]

Why not go ahead.

Senator KERRY. Let me ask you one quick question, and I do not mean this at all facetiously or otherwise.

As you know, we have had a problem with reinterpretation subsequently of other treaties, et cetera. Do we and can we consider your testimony on this treaty as authoritative with respect to the interpretation of this treaty, or do we have to examine the negotiating record?

Mr. THOMAS. The testimony I have is administration testimony. I was the chief delegate to the Montreal negotiation session, and I think what I have relayed to you is exactly what occurred and is my interpretation as a spokesman for the administration of what occurred during that negotiation process.

Senator KERRY. There is no other interpretation that anybody has suggested to you that might subsequently come in front of this committee?

Mr. THOMAS. As far as the United States is concerned?

Senator KERRY. Right.

Mr. THOMAS. Not to my knowledge. The issue of interpretation is an issue on this treaty, as it always is, internationally.

We are already in the midst of implementation of this Protocol in the United Nations Program. We have already had sessions and begun to work through things like data requirements and what definitions mean. So the normal process of what it would mean by that is going on.

But as far as the United States is concerned, we have a very consistent position throughout the administration as to exactly what was meant by all definitions.

Senator KERRY. Now, with respect to substitute chemicals which are currently being explored, I understand duPont is looking at

something that they say may or may not be available as a substitute in five to seven years.

The substitutes are obviously targeted at ozone reduction. Will they also be examined with respect to their heat retaining properties and to the warming effect as well?

Mr. THOMAS. As we look at the chemical substitutes, we look at the implications of that chemical from a variety of perspectives. One big one we look at is toxicity. We in EPA, through the Toxic Substancy Control Act, approve all new chemicals that go on the market, so we do extensive testing on toxicity. We also look at the environmental effects.

The substitutes that are being developed actually are being developed and evolved faster than I anticipated. AT&T and a joint chemical firm came forward and announced a substitute for CFC113, which is one of the ones that we were concerned about, just within the last several weeks.

We, the United States sponsored with Environment Canada and the Conservation Foundation a major trade fair about a month ago. We had over 600 participants. Many, many countries participated. I was very encouraged by the presentations by industry as to what they were doing both on substitute chemicals but also new process technology, particularly by U.S. industry.

Senator KERRY. But it will be examined by EPA with respect to the heat warming as well? Are we going to be concerned about that?

Mr. THOMAS. Yes.

Senator KERRY. Let me just say that Senator Pell is voting down the hall in the Labor and Human Resources Committee. He will be back momentarily. There are a few quick votes, and we are just waiting for a quorum, which should be here momentarily, at which point we will move immediately towards a vote.

Do any of my colleagues who have arrived at the last few minutes, Senator Boschwitz, Senator Lugar or Senator Pressler, have any questions you want to ask of the witnesses?

Senator LUGAR. No.

Senator BOSCHWITZ. [Nodded in the negative.]

Senator PRESSLER. [Nodded in the negative.]

Senator SANFORD. Mr. Chairman, I would just ask one more question.

I am always interested in what the United Nations does. I know that UNEP was responsible for getting this started. I wonder if it was just a catalytic agent or did it play a special role in facilitating the Montreal negotiations. If so, what role did it play?

Mr. THOMAS. It clearly was, I think, the central agent for moving this process forward all the way from the beginning and is currently there. It is a small agency, but it showed, I think, considerable leadership in dealing with this issue, trying to develop a global solution to the problem.

They jointly sponsored with the United States a number of international workshops for bringing scientists together, which I thought was very important in trying to get scientific consensus.

They also jointly sponsored workshops and provided the focal point for the negotiating sessions. They have subsequently continued.

Clearly, Mestophic Tolba, who is the Director of the United Nations Environment Program, was a leading figure in the Montreal Protocol negotiation in Montreal. He was a very significant figure in moving those negotiations forward, a very positive force.

Since that protocol has been signed, he has continued to demonstrate that leadership in the ratification process in working with all the countries in that regard.

I met with him about two weeks ago in France in another meeting, and we continued to discuss this issue. He was having a meeting at that point with representatives of countries beginning the implementation process, working through data requirement, what would be required.

So I would commend him and that agency very highly as the most important force for bringing this overall global protocol to a conclusion.

Senator SANFORD. Thank you so much.

The CHAIRMAN. [presiding]. Are there any other questions on this slide?

[No response.]

The CHAIRMAN. Well, then, we thank you very much indeed, Mr. Administrator, for being with us, and we congratulate you again on the fine job you are doing.

Mr. THOMAS. Thank you, Mr. Chairman.

The CHAIRMAN. We plan to vote on this treaty today if we can.

[Whereupon, at 11:00 a.m. the hearing adjourned.]

APPENDIX

STATEMENT OF
SENATOR JOHN H. CHAFEE
BEFORE THE SENATE COMMITTEE ON FOREIGN RELATIONS
HEARING ON
THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER
FEBRUARY 17, 1988

Mr. Chairman and Members of the Committee. Any discussion about the Montreal Protocol to protect the ozone layer undoubtedly will reveal a fair amount of disagreement. But the common theme -- the message that should be heard loud and clear -- is this: the United States should ratify this agreement, we should ratify it as soon as possible, and we should press the rest of the world to do the same.

The disagreement focuses on a simple question: Does the Protocol go far enough? Does it adequately protect the environment?

Unfortunately, it does not. This became painfully obvious at a hearing we held in the Environment Committee last October. The evidence we heard from a distinguished panel of scientists convinced me that we must move quickly and forcefully to eliminate, not just reduce, chemicals that are destroying the Earth's protective ozone shield. The primary culprits are a class of chemicals known as chlorofluorocarbons or CFCs.

Mr. Chairman, those who argue that the Protocol adequately protects the environment are assuming that the agreement's reduction schedule will provide a sufficient stimulus for the creation of safe substitutes. They tell us that a 50% cut is enough to trigger a market-induced elimination of these harmful chemicals.

Well, put me down as a skeptic and one who is not willing to entrust the survival of our planet to an economic theory. It is not enough to "hope" that the economists are right.

After the October hearing, several of us wrote to Dr. Tolba, UNEP's Executive Director, and urged him to call an emergency meeting of the parties to review and respond to the most recent evidence on the "Hole" over Antarctica. That evidence tells us it is not enough to simply reduce our use of these chemicals.

With your permission, Mr. Chairman, I will submit for the Record several items: copies of our November 17th letter to Dr. Tolba; his response of November 30th; and two recently passed Senate Resolutions on this subject. The first, Sen. Res. 226, was passed while negotiations on this Protocol were underway. The second, Sen. Res. 312, was approved after the agreement was signed in Montreal and before it was transmitted to the Senate.

Throughout this discussion, it is important to keep in mind that CFCs and halons -- the other group of chemicals covered by the Protocol -- are not only responsible for destruction of our ozone shield, they are also "greenhouse gases". They are significant contributors to the enormous problem of global climate change.

Mr. Chairman, it is my intention to build on our earlier work in this area, including legislation that Senator Baucus and I introduced last year. We need to work on several fronts to achieve the "ultimate objective" of the Protocol, namely: elimination of these harmful chemicals.

As a first step, I suggest we put together a resolution that the Senate can consider in conjunction with this Protocol. The resolution could be used to make several points:
first, the U.S. must continue to be a world leader in this area;
second, we need to convince the rest of the world to ratify the agreement as quickly as possible;
third, we need to work through the international process to speed up the agreement's reduction schedule and to go beyond the reductions already agreed to; and
fourth, if the international process won't move far enough, or if it won't move fast enough, we have to be ready to impose new, more stringent requirements in this country.

Unilateral controls are a tough pill to swallow but, when combined with stringent trade restrictions, they can be a powerful tool to bring other countries around.

In conclusion, Mr. Chairman, as an environmental regulation, the Montreal Protocol is seriously flawed. Fortunately, it can be fixed.

As an international environmental agreement, it is an historic document and a significant achievement. We owe a great deal to those who made it happen -- Dr. Tolba, Lee Thomas, Ambassador Richard Benedick, and a host of dedicated staff who worked long and hard on this matter. This Protocol deserves to be ratified by this country and by the rest of the world as soon as possible.

QUENTIN N. BURDICK, NORTH DAKOTA, CHAIRMAN
DANIEL PATRICK MOYNIHAN, NEW YORK
GEORGE J. MITCHELL, MAINE
MAX BAUCUS, MONTANA
FRANK R. LAUTENBERG, NEW JERSEY
JOHN B. BREAUX, LOUISIANA
BARBARA A. MIKULSKI, MARYLAND
HARRY REID, NEVADA
BOB GRAHAM, FLORIDA
ROBERT T. STAFFORD, VERMONT
JOHN H. CHAFEE, RHODE ISLAND
ALAN K. SIMPSON, WYOMING
STEVE SYMMS, IDAHO
DAVE DURENBERGER, MINNESOTA
JOHN W. WARNER, VIRGINIA
LARRY PRESSLER, SOUTH DAKOTA
PETER D. PROWITT, STAFF DIRECTOR
BAILEY GUARD, MINORITY STAFF DIRECTOR

United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510-6175

November 17, 1987

Dr. Mostafa Tolba
Executive Director
United Nations Environmental Programme
P. O. Box 30552
Nairobi, Kenya

Dear Dr. Tolba:

We are writing to you at this time for several reasons. First, to formally congratulate you and your entire organization for the outstanding work that led to the historic Montreal Protocol To Control Ozone Depleting Substances. The success of that effort is a real tribute to your leadership and commitment to forging a solution to this global environmental problem.

Second, to urge you to take whatever steps are appropriate to encourage all countries to ratify both the Vienna Convention and the Montreal Protocol as quickly as possible. In the United States, we are pressing the President and Secretary of State to transmit the Protocol to the Senate for immediate consideration and approval. A copy of a recently approved Senate Resolution on this subject is enclosed. It is important that similar, prompt action is taken in other countries to bring the Protocol into effect as quickly as possible.

Finally, based upon a recent Senate hearing on the Antarctic ozone "Hole" and the new data that has emerged from scientific expeditions to that region, we recommend that you seriously consider the scheduling of two emergency meetings.

The first meeting should bring together scientific experts to review the most recent data from Antarctica and elsewhere. This scientific review should occur within the next six months. The availability and potentially devasting implications of this new data have convinced us that there is no rational reason to delay. The provision of the Protocol calling for a 1989 scientific review did not anticipate that such shocking new evidence would appear less than two months after the signing of the Protocol.

The second meeting should bring together all interested countries to consider what steps may be needed to protect the Antarctic ecosystem and the entire Southern Hemisphere. This meeting should occur as soon as possible. As with the scientific review, the fact that the Protocol provides for such a meeting in 1990 is not a sufficient reason to delay.

The recent, preliminary evidence from Antarctica serves to highlight the need for early ratification of the Convention and the Protocol. The loss of ozone over the region in 1987 was greater than any previous year and chlorine from man-made chemicals has been identified as a major cause of such loss. Unfortunately, this evidence also calls into question the adequacy of the control measures that are included in the Protocol. Wholly apart from the implications that such data has for future ozone depletion on a global scale, the potentially devasting effect of the "Hole" on the Antarctic ecosystem, the Southern Hemisphere and the world's food chain warrant emergency action.

In the sessions leading up to Montreal, all of the parties understood that the Antarctic "Hole" was not the basis for the agreement. It is our understanding that, as early as the Geneva session in December 1986, you made an explicit pledge to call an emergency session to reopen the agreement if it turns out that the "Hole" is caused by chlorofluorocarbons (CFCs).

That condition now appears to be satisfied. As stated at our hearing of October 27, 1987, by Dr. Michael B. McElroy, Chairman of Harvard University's Department of Earth and Planetary Sciences, a well-respected atmospheric chemist:

> There is little doubt in my mind that industrial sources of chlorine and bromine contribute in a major way to the loss of ozone observed in recent years in spring over Antarctica. The need for a policy response is urgent and immediate.

We thank you in advance for your personal attention to this important matter, look forward to your response, and pledge to work with you to address this environmental threat.

Sincerely,

Max Baucus
United State Senator

John H. Chafee
United States Senator

Quentin N. Burdick
United States Senator

Robert T. Stafford
United States Senator

George J. Mitchell
United States Senator

Dave Durenberger
United States Senator

UNITED NATIONS ENVIRONMENT PROGRAMME

PROGRAMME DES NATIONS UNIES POUR L'ENVIRONNEMENT

Cable Address: UNITERRA, Nairobi
Telex No.: 22068
Telephone: 333930

P.O. Box 30552,
Nairobi, Kenya

Your Reference:

Our Reference:

30 November 1987

Dear Senator Chafee,

Thank you for the letter of 17 November concerning UNEP's achievements on The Montreal Protocol on Substances that Deplete the Ozone Layer and proposals for early measures needed to ratify the protocol and further address the ozone depletion issue.

I am very grateful for your complimentary comments on UNEP's leadership and success in helping governments to reach agreement on the Protocol. I share your view that it is a historic agreement with far-reaching consequences and we are proud to have been able to play an important role in its accomplishment. I know as well that a great deal of effort lies ahead in implementing the Protocol, and UNEP is already moving to bring together the information and agreement among governments to that end.

We have already taken steps to encourage governments to move ahead rapidly to ratify the Convention and Protocol. On October 27 I wrote to selected governments and international organizations drawing their attention to the need for early ratification, for participation in an early workshop to exchange information on technologies and administrative strategies for reducing emissions of substances controlled under the Protocol and for developing alternatives and identifying areas in which further research and technical development are required. I also indicated that in accordance with Resolution 3 of the Final Act at Montreal, I would be convening a meeting of governmental and international organization experts to recommend ways to harmonize data on production, imports and exports to ensure consistency and comparability of data on controlled substances.

Likewise, I share your concern about the need to decide if there is a need to hold emergency meetings on ozone depletion based upon latest scientific evidence. I did, as you note, pledge to call for additional urgent measures if it is clear that the ozone "hole" is CFC induced.

The Honourable John H. Chafee
United States Senator
United States Senate
Washington D.C. 20510
U.S.A.

For several reasons I believe that it would be important to make a comprehensive convincing scientific evaluation of this issue. Despite new findings from the Antarctic studies, the scientific assessment of these findings is still being conducted. While I agree with the urgency of the action, I feel it is very important that whatever steps we decide to undertake be based on firm scientific evidence and that the evidence be considered fully at the international level. Without reasonably broad agreement on the nature and seriousness of the depletion, we will not achieve the collective action we need.

I am, therefore, willing to convene a scientific meeting as soon as we have adequate scientific information. Much of that evidence is available in the United States, particularly through NASA, and I would be willing to consider views of NASA and other scientists about whether we have adequate information to proceed. Based on these views it might well be possible to convene a meeting of select internationally recognized scientists, possibly in May or June 1988, to review the evidence and make recommendations to UNEP.

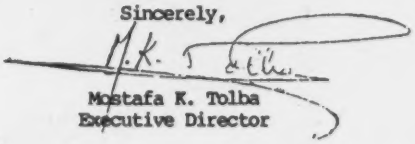
Since most of the information would be based on the U.S. scientific mission, it would be natural to see the United States hosting such a scientific meeting in the United States.

Based upon the scientific meeting I could then decide whether it would be necessary to convene a meeting of governmental officials to consider the scientific recommendations and decide upon the necessity of further control measures. This could be accomplished later in 1988.

This, I believe is a reasonable and deliberate approach that would allow us to consider fully the available knowledge and bring the international agreement we will need to take further action.

Again, thank you for your letter and your strong interest in one of our most serious global environmental issues.

Sincerely,



Mostafa K. Tolba
Executive Director

III

100TH CONGRESS
1ST SESSION

S. RES. 226

IN THE SENATE OF THE UNITED STATES

JUNE 5, 1987

Mr. BAUCUS (for himself, Mr. CHAFEE, Mr. BURDICK, Mr. STAFFORD, Mr. PELL, Mr. DOLE, Mr. MITCHELL, Mr. LUGAR, Mr. REID, Mr. EVANS, Mr. KERRY, Mr. DURENBERGER, Mr. ADAMS, Mr. BENTSEN, Mr. BINGAMAN, Mr. BOREN, Mr. BUMPERS, Mr. COHEN, Mr. CONRAD, Mr. DASCHLE, Mr. DODD, Mr. GORE, Mr. HARKIN, Mrs. KASSEBAUM, Mr. KENNEDY, Mr. LEAHY, Mr. MOYNIHAN, Mr. PRYOR, Mr. SIMON, Mr. WIRTH, Mr. HOLLINGS, Mr. DECONCINI, Mr. BRADLEY, Mr. HEINZ, and Mr. ROCKEFELLER) submitted the following resolution; which was considered and agreed to

RESOLUTION

Expressing the sense of the Senate with respect to ongoing international negotiations to protect the ozone layer.

Whereas, the United States is participating as world leader in ongoing international negotiations sponsored by the United Nations Environment Programme to protect the ozone layer (the Earth's natural shield against harmful ultraviolet radiation) and to control manufactured ozone depleting chemicals;

Whereas, the United States' position calling for a freeze on production of certain ozone depleting chemicals at 1986 levels to be followed by the virtual elimination of such chemicals is a sound policy response to a global environmental threat;

Whereas, the potential human health effects of increased ultraviolet radiation including increased skin cancer, suppression of the immune system, and increased cataracts and other eye disorders;

Whereas, the potential environmental and welfare effects of stratospheric ozone depletion include global climate change, increased "smog" from ground-level ozone, crop and vegetation damage, marine and aquatic ecosystem impacts, and deterioration of man-made materials;

Whereas, suggestions that simple changes in lifestyle can offset these adverse health and environmental effects of ozone depletion are misstatements of fact;

Whereas, considering these health and environmental effects, there is no safe or acceptable level of ozone depletion;

Whereas, even a 50 per centum reduction in the production and use of certain ozone depleting chemicals by the year 1996 is predicted to result in approximately 9 per centum depletion of the ozone layer within the next seventy-five years; and

Whereas any international agreement negotiated by the United States should accomplish two important goals—the protection of the public health and the environment and the protection of American jobs through adequate trade provisions: Now, therefore, be it

Resolved, That it is the sense of the Senate, that the President of the United States should be urged to strongly endorse the United States' original position in ongoing international negotiations to protect the Earth's ozone layer and the United States should continue to seek aggressively an international agreement which will provide for an immediate

freeze in the production of the major ozone depleting chemicals at 1986 levels, a prompt automatic reduction of not less than 50 per centum in the production of such chemicals and, as set forth in the United States' original position, and the virtual elimination of such chemicals; such agreement shall provide for regularly scheduled assessments of scientific, economic, and technological factors.

○

III

100TH CONGRESS
1ST SESSION

S. RES. 312

Expressing the sense of the Senate with respect to ratification of the Montreal Protocol to the Vienna Convention for the Protection of the Ozone Layer.

IN THE SENATE OF THE UNITED STATES

NOVEMBER 3 (legislative day, OCTOBER 16), 1987

Mr. BYRD (for Mr. BAUCUS) (for himself, Mr. CHAFEE, Mr. MITCHELL, Mr. STAFFORD, Mr. BYRD, Mr. DURENBERGER, Mr. PELL, Mr. EVANS, Mr. BURDICK, Mr. PACKWOOD, Mr. MOYNIHAN, Mr. LEAHY, Mr. WIRTH, Mr. LAUTENBERG, Mr. ADAMS, Mr. BINGAMAN, Mr. BOREN, Mr. BRADLEY, Mr. BUMPERS, Mr. CONRAD, Mr. CRANSTON, Mr. DECONCINI, Mr. DODD, Mr. GORE, Mr. GRAHAM, Mr. HARKIN, Mr. KENNEDY, Mr. KERRY, Mr. LEVIN, Mr. PRYOR, Mr. REID, Mr. RIEGLE, Mr. SANFORD, Mr. SIMON, Mr. LUGAR, and Mr. DASCHLE) submitted the following resolution; which was considered and agreed to

---

RESOLUTION

Expressing the sense of the Senate with respect to ratification of the Montreal Protocol to the Vienna Convention for the Protection of the Ozone Layer.

Whereas, the United States, in cooperation with other nations, has and is continuing to sponsor major scientific expeditions to investigate the dramatic loss of ozone that occurs over Antarctica each Spring;

Whereas, the loss of ozone over Antarctica and significant portions of the southern hemisphere in the Spring of 1987 was greater than any previous year, measurements showing an

almost total loss of ozone at certain altitudes over a portion of the region;

Whereas, the atmosphere's protective ozone layer is so depleted over Antarctica in the Spring-time that sponsors of the scientific expeditions are concerned about the safety of scientists in the region as well as the impact that the resulting increased ultra-violet radiation may have on the biota of the region, including the base of the world's aquatic food chain;

Whereas, the continued seasonal expansion of this ozone depletion phenomenon could have serious environmental consequences for the inhabitants of Southern South America;

Whereas, there is growing concern over the potential for chemical reactions occurring in the atmosphere over Antarctica to occur in other areas throughout the world;

Whereas, measurements made from the ground in Switzerland, North Dakota and Maine appear to show significant ozone depletion in Spring or late winter;

Whereas, man-made chemicals are the primary source of the chlorine that is a major cause of the annual ozone loss over Antarctica;

Whereas, the continued build-up of chlorine in the atmosphere that is caused by the use of chlorofluorocarbons and other ozone depleting substances will have detrimental impacts on stratospheric ozone levels over Antarctica and the entire globe throughout the entire next century;

Whereas, the United States is responsible for approximately one-third of the world's production and consumption of ozone depleting substances;

Whereas, United States industries have made a major commitment to the phase-out of certain chlorofluorocarbons and the development of safe substitutes;

Whereas, on September 16, 1987, the United States, together with some twenty-five nations, signed the Montreal Protocol to Control Ozone Depleting Substances, a protocol to the Vienna Convention for the Protection of the Ozone Layer;

Whereas, the Montreal protocol has not been transmitted to the Senate for advice and consent to ratify: Now, therefore, be it

Resolved, That it is the sense of the Senate, that—

(a) Wholly apart from its implications for global ozone depletion, the ozone "hole" that forms over Antarctica poses a threat to public health and the environment in the southern hemisphere and the entire globe;

(b) The United States should take a leadership role and set an example for the rest of the world to protect the environment by taking steps toward ratification of the Montreal Protocol To Control Ozone Depleting Substances as quickly as possible;

(c) The President should immediately transmit the Montreal Protocol To Control Ozone Depleting Substances to the Senate for advice and consent to ratify said Protocol as early as possible in the 100th Congress;

(d) The President should immediately call upon a sufficient number of countries to move toward ratification of the Montreal Protocol To Control Ozone Depleting Substances so that the Protocol will enter into force as soon as possible.

STATEMENT OF SENATOR MAX BAUCUS

HEARING ON RATIFICATION

OF MONTREAL PROTOCOL HEARING

February 17, 1988

Mr. Chairman, I want to commend you for holding today's hearing. I know you and this Committee have been deeply involved in the INF Treaty.

However, by setting aside that process for the moment, you are demonstrating the importance of protecting earth's ozone shield.

Before I talk about the ozone layer and the Montreal Protocol, I would like to say a few words about Lee Thomas, who will appear before you on behalf on the Administration.

As a member of the Environment and Public Works Committee, I've had my run-ins with the EPA under this administration - some of those confrontations have been with Lee.

But on the issue of stratospheric ozone, Lee Thomas and I share a deep mutual concern. While Senator Chafee and I have pushed here in Congress for an effective protocol, Lee Thomas has held the line within the administration. While others propose hats and sunglasses, Lee Thomas has proposed solutions to the ozone crisis.

And when it became apparent that certain European countries and Japan were going to push for an ineffective agreement, Lee personally intervened.

Just last week Lee was in Russia, where I understand he raised the issue of global climate change. I plan to ask him personally about this effort. Global warming is no longer a theory; it is a scientific fact. Only with strong leadership from people such as Lee Thomas can we begin to develop policies to address global warming in a timely fashion.

MONTREAL PROTOCOL

The subject of today's hearing is the Montreal Protocol to the Vienna Convention.

I hope this Committee will take quick action and report the Montreal protocol for consideration by the full Senate.

The United States has led the battle to protect earth's stratospheric ozone from damaging chlorofluorocarbons.

In June of 1975 -- over a decade ago -- a Federal Task Force on Inadvertent Modification of the Stratosphere issued a report on chlorofluorocarbons and the environment.

The report stated, and I quote:

> "The Task Force has concluded that fluorocarbons released to the environment are a legitimate cause for concern. It has also concluded that unless new scientific evidence is found to remove the cause for concern, it would seem necessary to restrict use of

> fluorocarbons -11 and -12 to replacement of fluids in existing refrigeration and air-conditioning equipment and to closed recycled systems or other uses not involving release to the atmosphere."

That was a strong statement 13 years ago. And as some of you may recall, this was not a study by a single government agency or environmental group. It was a major inter-departmental effort to examine the effects of CFC's on the environment.

Their report stirred interest in a new environmental problem. Its findings, while criticized, have never been refuted.

In 1978, the United States, Canada and a few Scandinavian countries that took the problem seriously finally took action. The use of CFCs as a propellent in aerosol cans was banned.

That action gave the world a brief respite from the problem -- breathing time to become

educated on the seriousness of this emerging environmental crisis.

Today we know what we are facing. It is this understanding that leads us to the Montreal Protocol.

I, for one, am becoming increasingly concerned that the protocol may be too little, too late. The Montreal Protocol may not do enough to help avert serious environmental damage.

But, it is also clear that if there is any hope of lessening the damage to our atmosphere, the protocol must be ratified, and soon.

THREE OBJECTIVES

The protocol really accomplishes three objectives.

First, it caps production of CFC's and calls for phased-reductions in emissions. This will provide the incentives industry needs to develop substitutes.

Second, the protocol entices lesser developed countries to join the agreement. It promises that substitutes will be available for their use. This is critical if meaningful worldwide reductions are to be achieved, for without the participation of the lesser developed countries of the world, any controls we implement will be meaningless.

And third, the protocol provides for the use of trade sanctions against non-participants. In short, the agreement has some teeth.

Last week, Mexico became the first nation to ratify the protocol. Eleven countries, representing two-thirds of the world's CFC production, must agree to the protocol for it to take effect.

I believe it is vital to the success of this agreement for the United States to take a leadership role in making the protocol become reality. We are viewed by our global neighbors as a world leader in the protection of the environment.

And we are a major producer of the offending chemical. Thus, it is the United States that

holds the ultimate key to the success of the Montreal Protocol.

We need to move quickly. We need to ratify the protocol and then actively seek participation by the rest of the world.

Last fall the world was confronted with new evidence supporting immediate action. An expedition to investigate the Antarctic ozone hole conclusively linked CFCs to ozone depletion.

This finding is a significant scientific discovery.

But more important to today's discussion, this finding is significant because the protocol specifically excludes consideration of the Antarctic ozone hole.

This situation raises questions about the adequacy of the protocol for a number of reasons.

What does the hole mean for the rest of the world? What does it mean for the southern oceans?

To answer these questions, we must look beyond the fall expedition to the behavior of the ozone hole at the beginning of December.

Each year the hole began to dissipate and disappear in early November. That is, until last year.

For the first time the ozone hole lasted until the first week of December. If the hole persists a few more weeks into the Antarctic summer -- the only time in the past when the hole has disappeared -- we could find ourselves with an ozone hole that is permanent.

I am troubled by the fact that the earth's protective shield has been destroyed for a few months each year. The possibility of having a permanent hole caused by a man-made luxury chemical is intolerable.

A second phenomenon that occurred last December which also raises "red flags" is that the hole moved from its perch over Antarctica to over the southern ocean.

This raises serious concerns about what effect increased ultra-violet radiation will have on living organisms in the ocean.

An ozone hole over the darkened ice-sheet of Antarctica when the sun is low presents a much different threat than unrestrained ultra-violet radiation pounding on the surface of the ocean when the sun is high in the sky.

In short, we may have reached the point where CFCs are directly affecting the food source for a major portion of the fisheries of the southern oceans.

While this scenario is just conjecture, it is plausible. And I raise the issue because it's likely that we may find a need for even greater reductions of CFC emissions than are now called for in the Montreal protocol.

A major international scientific panel is expected to determine this spring how much worldwide ozone depletion has already occurred.

This month an expedition to the Arctic is investigating whether ozone depletion is occurring over the northern pole. These investigations may shed a new, chilling light on the problem we -- as a planet -- now face.

Mr. Chairman, time is short. I believe that we will need even tougher controls on CFC emissions and faster movement toward substitutes than what we are talking about today. However, the first important step is to get the Montreal Protocol in place.

Expeditious action on the part of this Committee is critical. And then, Mr. Chairman, I am ready to assist you in having the Senate approve the Montreal Protocol as soon as possible.

I thank the committee for its time and attention.

STATEMENT OF SENATOR GEORGE MITCHELL

RATIFICATION OF THE MONTREAL PROTOCOL

SENATE COMMITTEE ON FOREIGN RELATIONS

February 17, 1988

On September 16, in Montreal, Canada, most of the major industrialized countries signed a significant international agreement. The treaty calls for 50 percent reductions by 1999 in the use of chlorofluorocarbons (CFCs), chemicals believed to deplete the ozone layer in the upper atmosphere. That ozone layer shields us from harmful ultraviolet rays. These same CFC compounds are also "greenhouse gases", contributing to the warming of the Earth's atmosphere.

The treaty is unparalleled as a global effort to control a potential environmental problem. The Environmental Protection Agency, which headed the U. S. delegation, deserves praise for its leadership in the face of internal pressure from within the Adminstration to weaken the U. S. position. The CFC industry deserves praise for its support of the treaty.

The potential effects of depleting the ozone layer are ominous. Last May, the Subcommittee on Environmental Protection, which I chair, and the Hazardous Waste and Toxic Substances Subcommittee, chaired by Senator Baucus, heard compelling evidence from leading scientists about the negative effects of increased ultraviolet radiation reaching the Earth's surface.

Increased ultraviolet radiation can increase skin cancer, cataracts and other eye disorders. Some medical experts believe it may suppress the human immune system. In addition, excess ultraviolet light would cause crop and plant damage, reduce the productivity of marine life, and contribute to global climate change.

Last October, our Subcommittees heard the dramatic preliminary results of this year's scientific expedition to investigate the so-called "ozone hole" over Antarctica. The ozone depletion was the greatest ever recorded, with measurements of a fifty percent total ozone loss. In some layers of the stratosphere, up to 97 percent of the ozone was depleted, prompting concern about the safety of the scientists conducting research in the region.

Witnesses at that hearing confirmed that man-made chlorine, much of it from CFCs, is a major cause of the annual ozone loss over Antarctica. The loss is of such magnitude that it in effect reduces the global ozone level by several percent. We also heard testimony about the potential impacts that increased uultraviolet radiation may be having on the marine ecosystem in the region. A rich, productive ocean area provides many of the nutrients for the world's oceans.

While the unique meteorology of the region appears to contribute to the severity of the Antarctic ozone loss, there is no doubt about the major role played by what the scientists call "perturbed chemistry." Dr. Sherwood Rowland, who postulated the initial theory of CFCs and ozone depletion in 1974, stated at the hearing that it would be risky to assume that those same chemical reactions could not take place over other parts of the globe.

The Antarctic "ozone hole" was not anticipated or predicted by any of our scientific theories. That kind of environmental "surprise" reminds us that we must be cautious and concerned about how man's activities may affect natural processes which we do not fully understand. We may be ignorant or unaware of other potential surprises, such as cumulative effects or significant interactions in the Earth's atmospheric and climate systems.

The treaty is a very strong step forward. The phased reduction in CFCs should provide an incentive for the industry to develop substitute chemical compounds. The reductions may help stabilize the rate of build-up of these gases in the atmosphere, but we must continue to ask if the treaty goes far enough or fast enough to adequately protect the ozone layer.

The key elements for a successful outcome with this kind of serious environmental challenge are an international commitment; continued industry cooperation; focused, sustained research and monitoring; and strong leadership from the United States Government.

As a minimum first step, the United States must take the lead among the signers of the Protocol and ratify this agreement as soon as possible. I urge my Senate colleagues to join me in supporting the Sense of the Senate Resolution with respect to ratification of the Montreal Protocol to the Vienna convention for the Protection of the Ozone Layer.

STATEMENT
OF
LEE M. THOMAS
ADMINISTRATOR
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
COMMITTEE ON FOREIGN RELATIONS
UNITED STATES SENATE

FEBRUARY 17, 1988

Good morning. I am very pleased to be here today to discuss with you the **Montreal Protocol on Substances that Deplete the Ozone Layer**, signed by the United States and 23 other nations in Montreal on September 16, 1987. I urge you to move forward as expeditiously as possible to provide your advice and consent to ratification.

The signing of the Montreal Protocol was an historic turning point in both international relations and environmental protection. For the first time, major action has been taken by a group of nations in anticipation of what could be a major global environmental problem. It is not a response to damage that has already occurred, but a solution to a potential problem for future generations.

The Montreal Protocol is a truly international agreement. Signed initially by 24 nations, including Japan and the European Economic Community, it has since been signed by an additional 6 countries, including the Soviet Union. Together, these countries account for well over two-thirds of current production of chlorofluorocarbons (CFCs) and halons, the two chemical compound

families believed to cause depletion of the ozone layer. In addition, the protocol was signed by many developing countries that do not now produce or use CFCs and halons in significant quantities, but are expected to increase their use of these chemicals as their economies develop. That developing nations are joining this effort to protect the environment augurs particularly well for the international community's ability to address this and other environmental threats in the future.

The Montreal Protocol was signed in response to growing scientific evidence linking increased atmospheric levels of chlorine and bromine to anticipated depletion of the ozone layer. If ozone depletion occurs, increased levels of harmful ultraviolet radiation would penetrate to the earth's surface, resulting in damage to human health and the environment.

The protocol would freeze the consumption of CFCs 11, 12, 113, 114 and 115 at 1986 levels beginning in mid-1990 or 6 months after entry into force. From mid-1993 to mid-1994 and each year thereafter, consumption would be reduced to 80 percent of 1986 levels, and from mid-1998 to mid-1999 and in each year thereafter, to 50 percent of 1986 levels. The protocol would also freeze the consumption of Halons 1211, 1301 and 2402 at 1986 levels starting 3 years after entry into force.

Special provisions apply to developing countries. Countries that consume less than 0.3 kg per capita per year of the controlled substances would be permitted to increase their use up to 0.3 kg per capita for a period of 10 years, after which time

they must begin a reduction schedule. It is widely believed that substitute chemicals and technologies will be available within the time frame, and the protocol encourages the major producing and consuming nations to facilitate the access of developing countries to safe alternatives. To ensure that low-consuming developing countries are able to obtain access to supplies of CFCs for essential purposes during the transition stage to new chemicals, the protocol allows producer nations to maintain their production of CFCs and halons slightly above levels otherwise allowable during the reduction steps.

The protocol also provides a mechanism for changes in the reduction schedule, based on new scientific, technical, and economic information. This process requires periodic reviews of the science, technology and economics, followed by formal meetings of the parties to review the assessments and decide if further or different steps to protect the ozone layer are required. The incorporation of scientific assessments into the risk management process at an international level is a very positive step, and should be encouraged in other areas of international environmental concern where scientific understanding can be anticipated to evolve.

Significant trade provisions are contained in the protocol. Within one year after entry into force, each party must ban bulk imports of the controlled substances from non-parties. Also, beginning in 1993, no party that takes advantage of the special provisions for developing countries may export the controlled

substances to non-parties. A ban on the import of products containing controlled substances from non-parties is also to go into effect within four years of entry into force, based on a product list to be developed by the parties.

The protocol calls for the parties to cooperate through international bodies on research, development, public awareness and information exchange. These cooperative activities will emphasize technologies for reducing emissions of controlled substances as well as alternative chemicals and chemical products. Expanded technical assistance is also urged, particularly to assist the developing nations to comply with the protocol and bridge the transition to new chemicals and technologies.

The protocol requires the parties at their first meeting to adopt procedures and institutional mechanisms for determining noncompliance and the treatment of parties found to be in noncompliance.

Finally, the accord establishes requirements for data reporting, backed up by a conference resolution calling for the United Nations Environment Program to convene a meeting of government experts to recommend to the parties measures for harmonizing and coordinating data on production, imports and exports.

Now that I have described the major substantive elements of the Montreal Protocol, I would like to turn to some key issues that are critical to the long-term success of the agreement.

We and other nations of the world must now move forward to implement the Montreal Protocol. As a first step in this process, on December 1, 1987, the Environmental Protection Agency proposed a regulatory program that would implement the international agreement provided, of course, that the U.S. ratifies the protocol. The proposed program follows the provisions of the protocol. It would go into effect when the protocol takes effect, which we anticipate will be January 1, 1989. We will promulgate a final rule on August 1, 1988.

The United States has moved forward quickly to implement the protocol, but many other nations are also involved in implementation activities. Mexico, for example, has already completed its ratification process. We expect that at least 11 countries representing two-thirds of global consumption of CFCs and halons will be able to ratify by January 1, 1989.

We have also taken a leadership position in the development of alternative technologies and chemical substitutes. In January of this year, the EPA, with Environment Canada and the Conservation Foundation, sponsored a conference focused on these emerging technologies. Over 600 individuals attended the conference, including over 80 representatives of government and industry from foreign nations. In addition to highly informative discussion sessions on alternatives to CFCs, there were over 30 specific technology exhibitions, a clear signal that industry has taken the protocol seriously and is moving rapidly into the development of substitutes.

Encouraging the development of alternative technologies and chemicals is a key part of our effort, both within the United States and internationally. As these new products become available, we in the United States will be able to achieve our production and consumption reductions with minimal economic disruption. We will also be in a position to market these innovative technologies abroad, and to enable the developing world to avoid major investments in CFC and halon production, investments which would have serious negative environmental consequences. In fact, it is the availability of alternatives that we believe will make it possible and prudent for many countries to join the protocol, and, with the trade restrictions coming into effect in the early 1990s, will assure that the Montreal Protocol is a truly international agreement.

I would like to close by briefly mentioning another key aspect of the protocol and our implementation effort here in the United States -- the consideration of adjusted controls in the future. As I mentioned earlier, the protocol allows for periodic reviews of the science, economics and technology to determine if further or different steps to protect the ozone layer are required. We believe this is a critical part of the agreement, as it sets in place an international process for further discussion, information exchange and action. It is this kind of a process, which builds upon the good will and international spirit of cooperation achieved in Montreal, that is essential if we are to protect the global environment.

This concludes my formal remarks. It has been my pleasure to appear before you today to discuss what I firmly believe to be the most significant international environmental agreement in history. I urge your favorable action as quickly as possible. I would be happy to answer any questions you may have.

Responses of Lee M. Thomas to Questions Asked by Senator Helms

Q. What is the Soviet Union doing about the ozone depletion threat? Do they intend to cooperate seriously with the other industrialized countries in meeting this challenge?

A. On December 29, 1987, the Soviet Union signed the Montreal Protocol. This act represents the final major step in obtaining full participation in the Protocol of the major chlorofluorocarbon (CFC) producing and consuming nations.

The Soviet Union was also one of the first nations to ratify the Vienna Convention for the Protection of the Ozone Layer -- the agreement under which the Protocol was negotiated.

The Soviet Union actively participated in the negotiations leading to the Montreal Protocol and has extensive scientific research underway related to stratospheric ozone. The United States and the Soviets recently included under their bilateral research agreement a number of activities related to stratospheric ozone research. For example, the Soviet Union is making efforts to calibrate their ozone monitoring instruments against instruments in the United States and has agreed to share research results related to the Antarctic ozone hole.

Based on this evidence, we believe that the Soviet Union intends to fully participate in international efforts to safeguard the ozone layer.

Q. There are those environmental groups which want the United States to go unilaterally beyond the baseline figures for reductions of CFCs beyond the levels mandated by the Protocol -- 20% by 1994 and 50% by 1999. What is the Administration's position on this? Is there any possibility that we will go beyond the mandated levels by those date?

A. In its proposed regulation (52 Federal Register 47489; December 14, 1987) implementing the Montreal Protocol, EPA specifically stated that what we were proposing was consistent with the terms of the Protocol; the chemicals covered, the amount and timing of the reductions, and the trade provisions mirrored that which are contained in the Protocol.

We also clearly state that, based on current scientific evidence, we believe that the reductions called for in the Protocol will adequately safeguard the ozone layer and that additional unilateral action by the United States is not warranted. We also refer to the Protocol provisions which recognize that scientific uncertainties exist and that more will be known in future years. Article 6 of the Protocol calls for periodic reassessment of the Protocol's provisions based on new scientific, technical, economic and environmental information.

The preamble makes clear that our position is that any changes to current requirements should be negotiated using the process set forth in the Protocol and should not be unilateral.

STATEMENT

OF THE

ALLIANCE FOR RESPONSIBLE CFC POLICY

TO

COMMITTEE ON FOREIGN RELATIONS
UNITED STATES SENATE

ON

THE MONTREAL PROTOCOL ON SUBSTANCES THAT
DEPLETE THE OZONE LAYER

FEBRUARY 17, 1988

The Alliance for Responsible CFC Policy is pleased to submit the following statement to the U.S. Senate Committee on Foreign Relations, in support of the ratification of the Montreal Protocol on Substances that Deplete the Ozone Layer. The Alliance is a coalition of U.S. industries that use or produce chlorofluorocarbons (CFCs). The Alliance's membership includes all five domestic manufacturers of CFCs and several hundred users of CFCs including small, medium and large businesses, and/or their trade associations.

The Alliance has been an active participant since 1980 in the debate concerning the need for further regulations of CFC compounds as a result of their potential role to contribute depletion of the ozone layer. The Alliance has sought to ensure that governmental directives and policies pertaining to CFCs are reasonable, scientifically sound, and economically and socially effective; to cooperate with and assist governmental bodies with respect to such directives and policies; to encourage scientific research on the consequences to man and the environment of any such effects on the ozone layer; and to maintain awareness among its members of legislative, regulatory, scientific, economic, technological and other developments relevant to the regulation of CFCs.

The Montreal Protocol has received widespread attention in the United States and around the world as an unprecedented hallmark of global cooperation among governments, industries, and environmental organizations. It represents the first time the nations of the world have joined forces to address an environmental threat in advance of fully established effects.

Perhaps the key significance of the agreement, however, is that it is a living document with a built in mechanism to ensure the continued balancing of environmental protection and worldwide economic developement interests. The success of the agreement will only come about therefore if we continue to strive to remain faithful

to the international process and cooperative effort that resulted in the successful completion of the complex negotiations.

The CFC Alliance was the first industry organization in the world to call for the completion of an international agreement under the auspices of the United Nations Environment Programme (UNEP). Since that time(September 1986) the Alliance worked with U.S. government representatives, industry groups worldwide, other nations' representatives, and environmental organizations, to promote the completion of a fair, but effective agreement. The Alliance's position has been based on the view that no immediate environmental hazard exists, that ample time is available for a reasonable transition to as yet unavailable compounds or emission control technologies, and that the only effective solution to protect the environment and the U.S. economy is a reasonable international accord that includes developed and developing nations.

The Montreal Protocol is a fair recognition of the Alliance's enunciated position. From a scientific viewpoint, the agreement provides an ample margin of protection for the earth's ozone layer and hence for the earth's population. From an economic viewpoint, the agreement has been signed by the current major CFC producer nations, including the U.S., Canada, Japan, the European Economic Community, and the Soviet Union; and properly balances the needs of the current major producers and users versus the needs of developing nations.

Two things are clear concerning the effectiveness of the Montreal Protocol:

--key to the success of the agreement in protecting the environment is the ability of restricting the growth in the use of the fully-halogenated CFC compounds. The computer model calculated differences over the long-term between the Protocol's reduction schedule and a true global freeze in the use of these compounds is small. The marginal environmental benefit of going beyond the Protocol's reduction schedule is even smaller.

--key to the success of the agreement in protecting our economy and U.S. jobs depends on an active effort to encourage broad participation by all countries in this agreement and in ensuring that the trade restrictions and other enforcement mechanisms are clearly enforced.

It is essential that the United States remain focused on the goal of encouraging maximum participation in the Montreal Protocol process rather than concern themselves with the insignificant marginal benefit of faster reduction schedule. Efforts to begin revising the agreement at this time will only discourage participation by other countries.

Furthermore, efforts to take additional unilateral action in the United States, in the name of global leadership, should also be discouraged. Efforts to lead by action, such as the unilateral ban in the U.S. of the use of CFC aerosol sprays, will only disadvantage our negotiating leverage. History has shown that our greatest leverage is as a participant in the process. This is precisely what occurred during the negotiating sessions on the Montreal Protocol.
Further unilateral action by the United States will produce little or no significant environmental benefit, more than double the current estimated costs of implementing the Montreal Protocol, and have the tendency to deemphasize the significance of the Protocol itself and its ongoing process of scientific, economic and technology assessment process.

In sum, the Alliance for Responsible CFC Policy believes the Montreal Protocol to be an important achievement that balances the need for environmental protection and the desire for global economic growth and competitiveness. The agreement should be ratified promptly. Efforts to alter the current agreement or to go beyond its provisions unilaterally will only discourage the widespread participation that is necessary to ensure its success. Such activities should be discouraged at this time.

The Alliance appreciates this opportunity to submit this statement of support and encloses for the hearing record "The Montreal Protocol: A Briefing Book", which summarizes the industries views of the agreement, editorial comments concerning the Protocol, the scientific assessment, and an estimate of the economic impact on the U.S. economy. The Alliance would be pleased to submit additional information or respond to any additional questions that you may have.

Thank you.

Polyisocyanurate Insulation Manufacturers Association

February 17, 1988

The Honorable Claiborne Pell
Chairman
Committee on Foreign Relations
U.S. Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On behalf of the Polyisocyanurate Insulation Manufacturers Association (PIMA), I am pleased to submit the Association's statement in support of the ratification of the Montreal Protocol on Substances that Deplete the Ozone Layer. PIMA is a trade association formed to advance the use of polyurethane/polyisocyanurate foams in side-wall sheathing and roof insulation application. Members represent over 80% of the industry production capacity.

Please do not hesitate to contact this office if the Association can answer any additional questions the Committee may have regarding our statement.

Sincerely,

Carl Wangman

Carl Wangman
President

104 Wilmot Road, Suite 201 ■ Deerfield, IL 60015-5195
(312) 940-8800, Telecopier (312) 940-7218

STATEMENT

OF THE

POLYISOCYANURATE INSULATION
MANUFACTURERS ASSOCIATION

TO

THE COMMITTEE ON FOREIGN RELATIONS
UNITED STATES SENATE

ON

THE MONTREAL PROTOCOL ON SUBSTANCES THAT
DEPLETE THE OZONE LAYER

FEBRUARY 17, 1988

The Polyisocyanurate Insulation Manufacturers Association (PIMA) is pleased to submit the following statement to the U.S. Senate Committee on Foreign Relations, in support of the ratification of the Montreal Protocol on Substances that Deplete the Ozone Layer. PIMA is a national trade association formed to advance the use of polyurethane/polyisocyanurate foams in side-wall sheathing and roof insulation application. Members represent over 80% of the industry production capacity.

This industry has been able to provide a product that was developed to help extract the U.S. from its dependency on foreign energy imports, a business that has had positive environmental impact with efficient homes and buildings needing less energy, and a business that requires little energy input, unlike other insulation products.

Many of PIMA's members have been active in the CFC issue since the mid-1970's and have actively participated in many of the Congressional hearings and regulatory meetings called to discuss this matter. Our goal throughout has been to educate the decision makers on the reasons for the use of CFCs in our product, the manufacturing process for these insulation products and the impact of CFC regulation on our industry.

This Association has always favored regulation of CFCs at the international level, and we, therefore, support ratification of the Montreal Protocol. We believe there is no need for greater restrictions than those set forth by the Protocol. We also believe the timetable mandated by the Protocol is more than adequate for prudent action given the scientific data currently available.

PIMA does not support any additional unilateral action by the United States, if the Montreal Protocol is not ratified by the member countries of UNEP. The failure of the rest of the world to follow the lead taken by the United States in banning the use of CFCs in aerosols is proof positive that such action is truly ineffective in dealing with this global issue. In addition, any further unilateral action will only significantly increase the costs of implementing the Protocol not to mention placing this country at an unfair competitive disadvantage in competing within the global market.

Now is the appropriate time to emphasize the positive accomplishments this document represents. It represents the first time the nations of the world have joined forces to address an environmental threat in advance of fully established effects. It also reflects an unprecedented degree of cooperation in balancing environmental protection and economic development interests. The commitment shown from the 31 signatory nations has implications which far transcend protection of the ozone layer.

We should not lose sight of the document itself. Any efforts to expedite the timetable contained in the Protocol, at this point, would produce nothing more than an insignificant margin of benefit. We support ratification of the Montreal Protocol as it is written, and encourage the Senate Committee to act promptly.

○